J. GOULD

MONOGRAPH

OF THE

RAMPHASTI

LONDON

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I

MONOGRAPH

OF

THE RAMPHASTIDÆ,

OR

FAMILY OF TOUCANS.

BY

JOHN GOULD, F.L.S.

LONDON:

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1834.

TO

PROFESSOR TEMMINCK,

OF LEYDEN,

IN TESTIMONY OF THE HIGHEST ESTEEM FOR HIS VALUED AND EXTENSIVE LABOURS

IN THE FIELD OF NATURAL SCIENCE,

THIS MONOGRAPH

OF

THE RAMPHASTIDÆ

IS DEDICATED,

WITH SENTIMENTS OF THE UTMOST RESPECT,

BY HIS OBLIGED FRIEND,

JOHN GOULD.

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PREFACE.

I AM induced to lay before the scientific world the present Monograph of a tribe of birds which has already claimed the attention of many of the most able ornithologists; first, because I am thereby afforded an opportunity of introducing to their notice several new species, which are here delineated for the first time; and secondly, from a desire to revise and set forth in as clear a light as possible the numerous species which this family contains, endeavouring at the same time to show their affinities to each other, by which they seem to divide themselves even into more minute groups than those of genera,—groups which are characterized by peculiar and unvarying though subordinate points of difference. These sections should, perhaps, be designated by some kind of nomenclature, and indeed it has been suggested to me that a distinguishing title to each is required. In this attempt, however, I do not feel myself quite warranted at present; but adhering to the established genera of *Ramphastos* and *Pteroglossus*, I have thrown the members of each together, as far as my views go, according to the indications of nature in their mutual affinities.

I have spared no pains in order to obtain all possible information on the subject, having for this purpose visited and carefully examined most of the collections on the Continent, as well as those of our own island; and I beg to add, that every species I have figured is at present in existence, and has been personally inspected. I mention this expressly, because there are two or three species figured in Levaillant's "Oiseaux de Paradis," as well as one or two others characterized in Professor Wagler's "Systema Avium," of which I have never yet been able to meet with examples. These I have omitted, being doubtful as to whether they ought to be regarded as the delineations of true species, or not: if they are, I hope at some future time to be enabled to discover them; but at present I am not sanguine as to their actual existence.

I would here beg to express my obligations to those who have rendered me assistance in

the publication of the present Work. To Richard Owen, Esq., Assistant Curator of the Museum of the Royal College of Surgeons, I am indebted for the elaborate "Observations on the Anatomy of the Toucan" given at the close of the Work, being the result of investigations instituted by himself expressly for this Monograph. From E. T. Bennett, Esq., Secretary of the Zoological Society, N. A. Vigors, Esq., M.P., and W. Swainson, Esq., I have received much valuable information.

To Lord Stanley, whose rich collection has been at all times most liberally opened to facilitate my inquiries, I am indebted for the use of the originals of three of the figures here delineated. To Professor Lichtenstein I have to express my sincere obligations for permission to avail myself of the treasures contained in the Royal Museum of Berlin, which has been so much enriched by his own personal exertions, and which afforded me two species of this family with which I was previously unacquainted. The fine collection in the National Museum of Paris was made available to me by M. Geoffroy St. Hilaire and his talented son M. Isidore St. Hilaire, from both of which scientific gentlemen I received much politeness and attention. I have not yet had an opportunity of inspecting the Leyden collection, for which purpose I expressly visited that city, the stores which are there being, it is to be regretted, so secured as not to be accessible; but M. Temminck informed me that they contained no species of this family unknown to the British and continental museums.

INTRODUCTION.

OF the birds illustrated in the present Monograph, so few species had been discovered in the days of Linnæus, that that great naturalist was induced to include them all in one genus, under the name of *Ramphastos*; but subsequent research in this branch of ornithological science having produced many additional examples, M. Illiger has with the greatest propriety arranged them under two distinct and well marked genera, applying the established term *Ramphastos* to the true Toucans, characterized by their large bills and square tails, and throwing the Araçaris, having graduated tails and less disproportionate bills, into a new genus, which he has denominated *Pteroglossus*, thus forming from the Swedish naturalist's limited genus an extensive family, the members of which are strictly allied to each other in general form and habits, constitute a group at once natural and well defined, and are no less remarkable for the peculiarities of their habits and manners than for their beauty of plumage, and in many species, though the enormous size of their bills may seem to contradict such an assertion, for the elegance of their form and movements.

In geographical distribution these birds are strictly confined to the tropical portions of America. According to the best information, they are a retiring and shy race, are mostly observed in small flocks or companies, and inhabit the dense woods and forests of that luxuriant country.

In their choice of food they are perfectly omnivorous; and although their elastic bill and delicately feathered tongue would lead us to conclude that fruits constituted the greatest proportion of their diet, we have abundant testimony that they as readily devour flesh, fish, eggs, and small birds, to which, in all probability, are added the smaller kinds of reptiles, caterpillars, and the larvæ of insects in general.

Most of the species, if not all, incubate in the holes of trees, laying two eggs at a time, of a delicate white.

The true Toucans, unlike many of the Araçaris, offer no sexual difference in the colour of the plumage; but the females are rather less than the males in all their proportions. The young of both genera assume at a very early age the adult colouring: their large bills, however, as might naturally be expected, are not fully developed for a considerable period.

Their flight is straight, and appears not to be effected without considerable exertion; while, on the contrary, among the trees, &c., they are as quick and graceful as can well be imagined, leaping from branch to branch with the most elegant agility.

In a state of repose, they turn their heads over their shoulders, the bill being completely hidden among the plumage of the upper parts and greater wing-coverts, and the tail raised vertically over the back, in which state the bird resembles a ball of feathers.

The habits of these birds in confinement, as observed on two of the species, have been admirably delineated in two papers published a few years since in the "Zoological Journal," by Mr. Broderip and Mr. Vigors. The details given by the latter gentleman are particularly valuable: they were derived from the observation of an individual of the Ariel Toucan, kept by him for several years, and are almost universally known on account of the numerous reprints of them which have been induced by the graceful manner in which they are recorded, no less than by the interest of the facts themselves.

With these few preliminary observations I dismiss the general subject, and proceed to offer some remarks on the distribution of the species which have fallen under my notice.

I. The Toucans are distinguished among the *Ramphastidæ* by the very disproportionate size of their bills, and by the comparative shortness and square termination of the tail. The general colour of their feathering is black; but the throat and the upper and under tail-coverts assume, in all the species yet known, a colouring different from that of the ground. The colour of the under tail-coverts appears to be invariably crimson; that of the upper tail-coverts is either crimson, white, or yellow, according to the several species. The throat is either white or yellow; and is terminated behind by a crimson band, which is in some species very narrow,

while in others it is so broad as to extend over the whole of the chest. The legs are of a slaty blue; and the naked space surrounding the eyes is usually of the same colour with the legs; in three species only is it crimson. The bill varies much in colour, and is subject to variation in this respect, even in the same species, according to the age of the individual: the general distribution of the colouring of the bill seems, however, to be constant. In its proportion to the size of the bird, the bill also varies with the age and sex of the individual, but seems to be constant in each species in the adult state. It also differs, according to the species, in the greater or less convexity of its sides; in the sharpness or roundness of its upper edge; and in the smoothness or jaggedness of its cutting edges.

A. The first section of the Toucans comprehends those in which the upper tail-coverts are yellow. In the whole of these the throat is white, with a faint tinge only of yellow; and the crimson band by which it is separated behind from the black of the under surface is of small breadth. All of them have the upper edge of the bill yellow, and a broad band of the same colour surrounding its base, this band being separated by a narrow line of black from the adjoining parts of the head and face. This section comprehends three species:

1. *Ramph. culminatus*; with the mandibles compressed laterally and wholly black, except the culminal and basal bands, which are pale straw yellow.
2. *Ramph. Cuvieri*; with the bill more attenuated than in *culminatus*; the mandibles convex and blackish brown, except the greenish yellow culmen and basal belt of the same colour, which is bounded before by a broad, and behind by a narrow, band of black.
3. *Ramph. erythrorhynchus*; with the entire bill red, except the yellow culmen and basal band, and the black borders of the basal band and cutting margins.

B. In the second section of the Toucans but one species is comprehended. It is characterized either by the total absence of the scarlet pectoral band, or by having it so faint as to be scarcely perceptible. The upper tail-coverts are white, exceed the ordinary proportions, and equal in length about one half of that of the tail-feathers. The throat is white; the space surrounding the eyes is red, and the eyelids blue. Such are the characters of

4. *Ramph. Toco*; with the bill rich orange, banded at its base and broadly blotched at its tip with black.

C. The third section of the Toucans comprehends two species, distinguished by the upper

tail-coverts being white and of the ordinary length, and by the yellowishness of the throat. In these the crimson pectoral band is narrow, and the naked space around the eye is of the same blue colour as the legs.

5. *Ramph. carinatus*; with the bill of several colours, including blue and green.
6. *Ramph. Swainsonii*; with the bill divided by a diagonal line, above which it is yellow, and with the crimson pectoral band separated by a white crescent from the yellow of the neck.

D. The fourth and last section of the Toucans comprehends those in which the upper tail-coverts are crimson, and consequently correspond in colour with the under tail-coverts. In the birds thus distinguished the throat is orange, generally more intense in the middle, and either fading gradually backwards, or giving place to a defined pale yellow band, separating the throat from the crimson which immediately succeeds it. The crimson of the breast varies in extent, according to the species, from a broad band to one of so great breadth as to occupy the entire breast. In one of the species the naked space surrounding the eye is blue; in the others it is red.

7. *Ramph. vitellinus*; with the bill black, its basal band blue, and the yellow of the throat fading into white on the sides and face.
8. *Ramph. Ariel*; with the bill black, its basal band yellow, and the deep yellow of the throat bounded behind by a defined pale yellow band.
9. *Ramph. dicolorus*; with the bill green, its basal band black, the yellow of the throat becoming paler round the whole of its circumference, and the crimson occupying the entire breast.

II. The Araçaris, possessing as a part of the family character a bill of great proportional size, have that organ nevertheless comparatively less developed than the Toucans. The tail furnishes a tangible distinctive character in its graduated form; it is also more lengthened. The most constant colour observable in these birds is green, which, in various shades from olive to grass green, occupies the upper surface of the back, wings, and tail, with the exception (generally) of the upper tail-coverts; in one or two species only is the space between the shoulders of a different colour. Except the green of the back, the colour of every other part varies with the different species, although some are more generally met with than others; such, for instance, is the crimson of the upper tail-coverts, which exists in all but a few species; such also the chestnut or black of the head and neck, which prevails throughout the greater part

of the group; such too the yellow of various intensities, and more or less interrupted, which spreads over a greater or less extent of the under surface in most of the species. None of these, however, is constant throughout the genus, which consequently presents in the different species comprehended in it, a greater variety of colouring than is met with in the Toucans, passing from the brilliancy and diversified painting of the Royal or Cayenne Araçaris, to the comparatively sombre appearance of the Golden-green or the Grooved-billed. The colour of the naked parts is similar to that which is met with in the Toucans; the legs being either blue or greenish, and the naked space round the eyes being generally of the same colour. There are only two species known in which the naked space surrounding the eyes is red.

A. In the first section of the Araçaris may be comprehended those species in which the yellow of the under surface is crossed by a band at the junction of the breast with the belly. In all these birds the yellow of the under surface is more or less blotched with crimson; the upper tail-coverts are crimson; and the head and neck are black, the black being occasionally converted into chestnut on the ears. The males and females offer no difference in their colouring. To this section belong:

1. *Pter. Aracari*; with the sides of the upper mandible dirty white, and the ventral band broad and crimson.
2. *Pter. Castanotis*; with the sides of the upper mandible obliquely divided into black and yellow, the sides of the face and of the head chestnut, and the ventral band broad and crimson.
3. *Pter. regalis*; with the sides of the upper mandible dirty white with black serrations, the ventral band narrow, black in front and crimson behind, and the black of the neck bounded behind by a narrow band of rich chestnut.

B. The second section of the Araçaris comprehends those in which the breast is crimson and the belly yellow. In these, as in the birds of the previous section, the upper tail-coverts are crimson; the head and neck are also of a dark colour, which is deep chestnut, except on the upper part of the head, where it is black. It comprehends two species:

4. *Pter. bitorquatus*; with the outer half of the lower mandible black, a yellow collar (occasionally absent) at the lower part of the throat, and the back of the neck crimson.
5. *Pter. Azaræ*; with the bill yellowish throughout, a narrow black band at the lower part of the throat, and a broad black band crossing the breast.

C. A third section consists of a single species, distinguished by the yellow, varied with crimson, of the whole of its under surface; by the deep crimson of the space between its shoulders, as well as of its upper tail-coverts; by the white of the upper part of its throat and of the sides of its head; and especially by the absence of barbs from the feathers of the last-named parts, and of the head generally, the shafts being so spread out, on the upper part of the head particularly, as to have the flattened and curled appearance of ebony shavings. It is the

6. *Pter. ulocomus*; with the bill crimson, blue, purplish red, and yellow, in longitudinal masses.

D. A fourth section of the Araçaris may be distinguished by the birds composing it having the throat, breast, and belly of a single colour, different from that of the upper surface. In the first of the species comprised in it the colours of the hinder part of the trunk are singularly counterchanged, the upper tail-coverts being yellow, while the under are crimson; whereas in all the other Araçaris in which these feathers differ in colour, it is the upper that are crimson, and the under that are yellow. The species are

7. *Pter. hypoglaucus*; with the under surface, except the tail-coverts and the hinder part of the neck, blueish grey.
8. *Pter. Bailloni*; with the under surface, sides of the face, and forehead yellow.

E. In the fifth section of the Araçaris are comprehended two species, in which the whole of the under surface, except the throat, is yellow or greenish yellow; the upper tail-coverts are, as usual, crimson; and the head and neck are of a much darker colour than the rest of the body. The colour of the head and neck in the birds of all the preceding sections is similar in both sexes: in those of the present section, these parts are black in the males and brown in the females.

9. *Pter. viridis*; with the upper mandible yellow above and chestnut below, and the lower mandible black throughout, except at its base.
10. *Pter. inscriptus*; with the bill yellow, black on its culmen, at its tip and base, and blotched with black along its cutting edges.

F. The sixth section of the Araçaris agrees with the preceding one in having the anterior part of the birds comprised in it of a darker colour than the remainder of the plumage, and in having those parts which are black in the males differently coloured in the females, except the back of the head in one species. The dark colour of the under surface extends

over the breast as well as the throat. The ear-coverts, and a crescent-shaped band separating the dark colour of the upper part of the neck from the green of the back, are yellow. In this section we find, for the first time, the upper tail-coverts destitute of any peculiar colour, and agreeing in tint with the adjoining part of the back.

11. *Pter. maculirostris*; with the bill white, marked on the sides of the upper mandible with about four large black blotches.
12. *Pter. Culik*; with the bill red at the base, and black throughout the remaining two thirds of its length.

G. The seventh and last section of the Araçaris comprehends two species, distinguished by the simplicity of their colouring from all those which have been previously noticed. They are of a nearly uniform colour, and are entirely destitute of those striking tints which vary so agreeably the plumage of the remainder of the genus. In both of them the upper part of the throat is white; in one of them the cheeks also are white, while in the other they are blue.

13. *Pter. prasinus*; with the under tail-coverts and tips of the tail-feathers brown.
14. *Pter. sulcatus*; with the under tail-coverts of the same green as the belly, and the tips of the tail-feathers tinged with blue.

In this last section, and especially in the last-named species, the bill acquires its maximum of deviation from the typical form of the family. Instead of being, as in the Toco Toucan, of greatly disproportionate length; compressed on the sides so as to be comparatively thin in its horizontal diameter while it is elevated in its vertical height; strongly arched along its upper edge, which is so narrow as to be almost sharp; and thin and light in its texture: it becomes in the Grooved-billed Araçari in every respect, as it were, condensed; its length is diminished so as to approach, in some degree, to the dimensions observable in certain Barbets, such as the *Bucco grandis* from the Himalayan mountains; its sides, though flattened and deeply grooved, are not approximated to each other, the horizontal or lateral diameter of the bill almost equalling its vertical height; the culmen is broad and flattened; and the whole substance is comparatively solid, and conformable to the structure observable in the approximating genera. In the form of its bill no less than in the colouring of its plumage the *Pter. sulcatus* is the most aberrant species of the family; it ought probably to be regarded as the type of a peculiar genus, and I should not have hesitated in so considering it, but for the intervention of the *Pter. prasinus*, which possesses most of its characteristics, though in a less marked degree, and which therefore connects it so immediately with the Araçaris in general as to

render its separation from them difficult. The Golden-green Araçari is assuredly a *Pteroglossus*; the Grooved-billed Araçari differs from it only in the still greater simplicity of its colouring, and in the greater development of those peculiar characters of the bill which show themselves to a certain extent in *Pter. prasinus*.

If, in the preceding account of the species of *Ramphastidæ*, I have rarely referred to the form of the bill as aiding in their discrimination, it is not to be attributed to any undervaluing of the important help to be thence derived, but to the difficulty of adequately conveying in words a correct idea of those varying shades of difference which are appreciable only by a practised eye and on direct comparison. My principal object has been to facilitate the ascertaining of the species of this interesting family, and I trust that I may have, to a certain extent, succeeded. In furtherance of the same view, I add the subjoined tabular attempt at a *Synopsis Specierum*.

SYNOPSIS SPECIERUM.

I. Caudâ breviore, quadratâ: rostro maximo. *Nigri; gutture caudæque tegminibus discoloribus.*—RAMPHASTOS.

Caudæ tegminibus superioribus flavis.
Pectore albo.
Rostro ut plurimum nigro, lateribus compressis . . 1. *culminatus.*
——————————— convexis . . . 2. *Cuvieri.*
——————— rubro . . . . . 3. *erythrorhynchus.*
Pectore pallidè lutescente . . . . . 4. *citreopygus.*
——— flavo . . . . . 5. *osculans.*
Caudæ tegminibus superioribus albis.
Pectore albo . . . . . 6. *Toco.*
——— flavo.
Rostro pluricolore . . . . . 7. *carinatus.*
——— obliquè dimidiatim flavo . . . . . 8. *Swainsonii.*
Caudæ tegminibus superioribus coccineis.
Rostro nigro.
Auribus albis . . . . . 9. *vitellinus.*
——— pectori concoloribus, (sc. flavis) . . . . 10. *Ariel.*
Rostro viridescente . . . . . 11. *dicolorus.*

II. Caudâ longiore, gradatâ: rostro majore. *Viridescentes; capite, gastræo, tegminibusque caudæ superioribus in plurimis discoloribus.*—PTEROGLOSSUS.

Gastræo bi- vel pluri-colore, coloribus discretis.
Pectore ventreque flavis, fasciatis.
Fasciâ ventrali coccineâ, latâ.
Maxillæ superioris lateribus sordidè albis . . 1. *Aracari.*
——————— obliquè dimidiatis nigris . . 2. *castanotis.*
Fasciâ ventrali anticè nigrâ posticè coccineâ.
Pectore maculâ nigrâ notato . . . . . 3. *regalis.*
——— torque latâ nigrâ cincto . . . . . 4. *pluricinctus.*
Pectore coccineo.
Torque pectorali vel nullâ vel angustâ, flavâ . . . 5. *bitorquatus.*
——————— latissimâ, nigrâ . . . . . 6. *Azaræ.*
Pectore ventreque flavis, haud fasciatis.
Maxillâ superiore dimidiatim flavâ et aurantiacâ . . 10. *viridis.*
——————— flavâ, nigro inscriptâ.
Maxillâ inferiore nigrâ . . . . . 11. *Humboldtii.*
——————— superiori concolore . . . . . 12. *inscriptus.*
Pectore gutturi concolore, ventre discolore.
Maxillâ superiore nigro maculatâ,
albescente . . . . . 13. *maculirostris.*
ut plurimum rubrâ.
apice concolore . . . . . 14. *Nattereri.*
—— nigrescente . . . . . 15. *Reinwardtii.*
Maxillis nigris,
basin versus rubris . . . . . 16. *Culik.*
paullum cinerascentibus . . . . . 17. *Langsdorffii.*
Gastræo unicolore, vel subunicolore.
Gastræo stragulo discolore.
Gastræo flavo, rubro intermixto . . . . . 7. *ulocomus.*
——— cœruleo-cano . . . . . 8. *hypoglaucus.*
——— flavo . . . . . 9. *Bailloni.*
Gastræo stragulo subconcolore.
Crisso discolore.
Mandibulæ superioris basi flavescente . . . 18. *prasinus.*
——————————— nigro . . . . 19. *pavoninus.*
Crisso concolore.
Uropygio concolore.
Rectricum apicibus concoloribus . . . 20. *sulcatus.*
——————— intermediarum duarum apicibus castaneis . . . . . 21. *Derbianus.*
Uropygio coccineo . . . . . 22. *hæmatopygus.*

ADDENDA TO THE INTRODUCTION.

IN my Preface to the present Monograph I intimated that I was aware that two or three additional species had been described by the late Professor Wagler in his 'Systema Avium' which might perhaps prove to be distinct from those figured by myself. Not having seen any examples of the birds themselves, and being consequently unable to determine with certainty as to their complete distinctness, I could not then include them in my work. I have since had an opportunity of personally examining them, during a recent visit to the Museum of Munich, in which they are deposited; and I now hasten to lay before the scientific public the results of my investigation, and to complete my account of all the species known up to the present time. The fine collection of Vienna afforded me examples of three new species, which, with one kindly forwarded by the Earl of Derby, another by N. C. Strickland, Esq., and a third by W. Swainson, Esq., make an interesting addition of ten species,—two Toucans and eight Araçaris,—of which the following is an enumeration.

The Toucans, although possessing nearly all the essential characters of the first section, A, of the genus *Ramphastos*, differ in some respects from other species referred to it. One of them has the upper tail-coverts remarkably pale, their colour being lemon-yellow, the full yellow of these feathers in the other species approaching, particularly at its edge, to orange. The other has a richly coloured neck and chest, and thus approaches the birds of section C. Arranging them as the fourth and fifth species of the first section A, they are distinguishable from all the other species, which have white chests, as the

Ramph. citreopygus; with the upper tail-coverts lemon-yellow.

Ramph. osculans; with the chest orange yellow in the middle, becoming paler towards its edges.

Of the Araçaris *Pter. pluricinctus* may be regarded as constituting a typical example of the first section, A, differing, however, in the slight variation of colour that takes place in its sexes and in the additional black band of its under surface; a band of which a rudiment may be conceived to exist in the black pectoral spot of *Pter. regalis*.

Pter. pluricinctus; with the sides of the upper mandible, including the serratures, dirty white, the ventral band black in front and crimson behind, a strong black pectoral band.

ADDENDA TO THE INTRODUCTION.

Humboldt's Araçari belongs to section E, where it will range between *Pter. viridis* and *Pter. inscriptus*; as,

Pter. Humboldtii; with the bill yellow, black on its culmen at its tip and base, blotched with black at its serratures, and with the under mandible black.

Langsdorff's, Natterer's, and Reinwardt's Araçaris belong to section F, with the following distinctive characters:

Pter. Nattereri; with the bill red, marked at the base of each mandible with a large black spot, and having the culmen and five or six blotches along the edge of the upper mandible also black.

Pter. Reinwardtii; with the bill reddish at the base, with several black spots near the cutting edge of the upper mandible, and with the culmen and terminal half blackish brown.

Pter. Langsdorffii; with the bill throughout nearly black, becoming slightly grey towards its base.

Pter. pavoninus, Derbianus, and *hæmatopygus* will range in the seventh or last section, G, and are thus characterized:

Pter. pavoninus; with the under tail-coverts and tips of the tail-feathers brown, and the lower mandible and base and cutting edge of the upper black.

Pter. Derbianus; with the under surface green throughout, and the tips of the two intermediate tail-feathers chestnut.

Pter. hæmatopygus; with the under surface green throughout, and the upper tail-coverts blood red.

As all the species comprised in this latter section appear to possess characters sufficiently distinct to warrant their separation as a peculiar genus, I propose to regard them in that light, and to give them the generic title of *Aulacorhynchus,* with the following characters:

Bill comparatively short, furrowed on the sides; culmen broad and flattened; base of the under mandible extending obliquely beyond the line of the eye. *Wings* short and round, the fourth quill-feather the longest, the fifth, sixth, and seventh being nearly of the same length. *Tail* comparatively short and less decidedly graduated than in *Pteroglossus.*—The whole of this group are characterized by a uniform green plumage, the feathers of which are loose and decomposed in their texture.

SYNOPSIS SPECIERUM.

I. Caudâ breviore, quadratâ: rostro maximo. *Nigri; gutture caudæque tegminibus discoloribus.*—RAMPHASTOS.

Caudæ tegminibus superioribus flavis.
- Rostro ut plurimum nigro, lateribus compressis. . . . 1. *culminatus.*
- ——— convexis . . . . 2. *Cuvieri.*
- ——— rubro . . . . . 3. *erythrorhynchus.*

Caudæ tegminibus superioribus albis.
- Pectore albo . . . . . 4. *Toco.*
- ——— flavo.
  - Rostro pluricolore . . . . . 5. *carinatus.*
  - ——— obliquè dimidiatim flavo . . . . . 6. *Swainsonii.*

Caudæ tegminibus superioribus coccineis.
- Rostro nigro.
  - Auribus albis . . . . . 7. *vitellinus.*
  - ———- pectori concoloribus, (sc. flavis) . . . 8. *Ariel.*
- Rostro viridescente . . . . . 9. *dicolorus.*

II. Caudâ longiore, gradatâ, rostro majore. *Viridescentes; capite, gastræo tegminibusque caudæ superioribus in plurimis discoloribus.*—PTEROGLOSSUS.

Gastræo bi- vel pluri-colore, coloribus discretis.
- Pectore ventreque flavis, fasciatis.
  - Fasciâ ventrali coccineâ, latâ.
    - Maxillæ superioris lateribus sordidè albis . . . 1. *Aracari.*
    - ——— obliquè dimidiatis nigris . . . 2. *Castanotis.*
  - Fasciâ ventrali anticè nigrâ posticè coccineâ . . . 3. *regalis.*
- Pectore coccineo.
  - Torque pectorali vel nullâ vel angustâ flavâ . . . 4. *bitorquatus.*
  - ——— latissimâ, nigrâ . . . . . 5. *Azaræ.*
- Pectore ventreque flavis, haud fasciatis.
  - Maxillâ inferiore nigrâ . . . . . 9. *viridis.*
  - ——— flavâ, nigro inscriptâ . . . . 10. *inscriptus.*
- Pectore gutturi concolore, ventre discolore.
  - Maxillâ superiore nigro maculatâ . . . . . 11. *maculirostris.*
  - Maxillis nigris, basin versus rubris . . . . . 12. *Culik.*

Gastræo unicolore, vel subunicolore.
- Gastræo stragulo discolore.
  - Gastræo flavo, rubro intermixto. . . . . 6. *ulocomus.*
  - ———- cœruleo-cano . . . . . 7. *hypoglaucus.*
  - ———- flavo . . . . . 8. *Bailloni.*
- Gastræo stragulo subconcolore.
  - Rectricum apicibus brunneis . . . . . 13. *prasinus.*
  - ——— concoloribus . . . . 14. *sulcatus.*

Genus Ramphastos, *Linné*.

Characteres Generici.

Rostrum capite longius, maximum, crassum, inane, cultratum, margine basali incrassato; maxillæ angulo frontali subtruncato transverso: nares verticales, pone maxillæ basin sitæ: tomia serrata: lingua angusta, pennacea. Cauda brevis, æqualis.

Bill very large, longer than the head, thick, light, curved, and thickened at the basal margin; the frontal angle transversely subtruncated; margins serrated. *Nostrils* vertical, behind the base of the bill. *Tongue* slender, long, and feathered. *Tail* short, even.

RAMPHASTOS CULMENATUS.
Culmenated Toucan.

RAMPHASTOS CULMINATUS.

Culminated Toucan.

Specific Character.

Ramph. rostro nigro, culmine fasciâque basali stramineis : ater ; gulâ pectoreque albis ; fasciâ angustâ pectorali tectricibusque caudæ inferioribus coccineis ; uropygii plumis sulphureis in aurantium ad apices transeuntibus.

Beak black, with a broad line of pale straw yellow along the whole length of the culmen, from which a basal belt of the same colour encircles both mandibles; throat and chest white bounded by a narrow pectoral band of crimson, which is also the colour of the under tail-coverts ; feathers of the uropygium brimstone yellow, passing off into fiery orange at their tips ; remainder of the plumage black.

Total length, from 18 to 20 inches ; *bill*, 4 to 5, breadth, scarcely 1 ; *wing*, $8\frac{1}{4}$ to 9 ; *tail*, $6\frac{1}{2}$ to 7 ; *tarsus*, 2.

Ramphastos culminatus. Gould, Proceedings of the Zool. Soc., Part I. p. 70.

It is now several years since I first received this fine species, which I had always been led to confound with the *Ramphastos Cuvieri* of Wagler. A more minute examination of its characters, however, has convinced me that the present bird is essentially different, particularly in the formation of its mandibles, having them invariably shorter and more incurved, with the upper one compressed laterally so as to present a narrow culmen bounded by a furrow on each side running its whole length ; a character very different to that of *R. Cuvieri*, the upper mandible of which is regularly swollen on its sides, of great length, and gradually drawn out to a point. With the exception of the bird just referred to, it is impossible to confound the present with any other known species.

The *Ramphastos culminatus* is a rare bird in the collections of Europe : a fine example graces the museum of Lord Stanley ; another—in all probability a female, the stature being inferior, and the characters alluded to less prominent—is in the museum of the Zoological Society of London.

The species was received from Mexico, to which country and the Spanish Main its habitat is in all probability restricted.

RAMPHASTOS CUVIERI, (Wagler).

Cuvier's Toucan.

Drawn from Nature & on Stone by J. & E. Gould.

Printed at Ewin's.

RAMPHASTOS CUVIERI, *Wagler.*

Cuvier's Toucan.

Specific Character.

Ramph. rostro brunneo-nigrescente, culmine fasciâque basali luteis, hac posticè lineâ nigrâ anticè fasciâ atrâ cinctâ: niger; genis, gutture, pectoreque albis lutescenti tinctis; torque pectorali caudæque tectricibus inferioribus coccineis, superioribus aurantiaco-flavis.

Beak brownish black on the sides, with a large basal belt and culmenal line of greenish yellow, the basal belt being bounded behind by a narrow line of black, and before by a broader one of deep black, which is only apparent in certain lights; the top of the head and whole of the upper surface black, with the exception of the upper tail-coverts, which are bright orange yellow; cheeks, throat, and chest white, with a tinge of greenish yellow terminated by a band of scarlet; under surface black; under tail-coverts scarlet.

Total length, 24 inches; *bill*, $7\frac{1}{4}$; *wings*, 9; *tail*, $6\frac{1}{2}$: *tarsi*, 2.

Ramphastos Cuvieri. Wagler, Syst. Avium.

The only naturalist who has hitherto noticed this fine and rare species appears to be Wagler, who has given a detailed account of its specific characters in his "Systema Avium." The species most nearly allied to it in form and colouring is the *Ramphastos erythrorhynchus*, but from which it may be at once distinguished by its larger size, and by the black colour almost universally spread over the mandibles in place of the bright scarlet which is so conspicuous in that species. The upper tail-coverts are also of a more intense orange.

In size, the *Ramphastos Cuvieri* is equal if not superior to the *R. toco*, its beak being fully as large, and although not keel-shaped along the upper ridge, is also similarly attenuated.

The rarity of this bird may be best understood, when I state, that my own specimen is the only one I have ever seen, with the exception of another which I have some recollection of in the Museum at Berlin, the splendid collection at Paris having no example. The one I possess, with my other rare and new species, will be added to the fine collection of the Zoological Society of London.

The natural habitat of this bird is doubtless the densely wooded districts on both sides of the Amazon; at least we are led so to suspect from its form, which agrees with the *R. erythrorhynchus* and *culminatus*, birds both natives of the same locality, or nearly so.

RAMPHASTOS ERYTHRORHYNCHUS, (Auct:)
Red-billed Toucan.

E. Lear del et lithog.

Printed by C. Hullmandel.

RAMPHASTOS ERYTHRORHYNCHUS.

Red-billed Toucan.

Specific Character.

Ramph. rostro rubro, vittâ fasciâque basali flavis, hac posticè lineâ anticè fasciâ nigris cinctâ; tomiis nigris: niger; jugulo pectoreque albis lutescenti tinctis; torque pectorali angustâ caudæque tectricibus inferioribus coccineis, superioribus saturatè flavis.

Beak red at the sides, with a broad line of yellow continued throughout its entire length, and a basal belt of the same colour, bounded posteriorly by a narrow line of black and anteriorly by a broader one of the same colour; a black line runs along the edges of both mandibles; naked skin round the eye; the legs and the feet blueish lead colour; general plumage black; the throat and chest white, with a tinge of greenish straw yellow, bounded by a narrow pectoral band of scarlet, the under tail-coverts being of the same colour, while the upper ones are deep yellow.

Total length, 23 inches; *bill*, $6\frac{1}{2}$; *wings*, $8\frac{1}{2}$; *tail*, $6\frac{1}{2}$; *tarsi*, 2.

Red-beaked Toucan. Edw., t. 238.
Ramphastos erythrorhynchus. Auct.
Le Toucan. Levaill., Ois. de Parad., vol. 2. t. 3.
Le Toucan à collier jaune? Levaill., Ois. de Parad., vol. 2 t. 4.
Toucan à gorge blanche de Cayenne, appellé Tocan. Buff., Pl. Enl., n. 262.
Ramphastos Levaillantii? Wagler, Syst. Avium.

The present species, as its name implies, is distinguished by the brilliant colouring of its beak, which loses its original brightness immediately after death, so that the specimens exhibited in our museums might often be mistaken, upon a superficial glance, for other species. In one respect it is subject to slight variety in its colouring, as we do not find in all specimens the delicate straw-coloured tinge on the white breast, which is in all probability the index of a recent change of plumage, and which perhaps disappears after a short exposure to the action of light and heat.

Richly ornamented with well contrasted hues of great brilliancy, this elegant species inhabits the deep forests which border the Amazon, and the wooded districts of Cayenne and Guiana, being spread in considerable abundance over a wide extent of country. In its general habits and manners it resembles the rest of its congeners, leaping lightly from branch to branch among the topmost foliage of the highest trees, where it passes its existence.

RAMPHASTOS CITREOPYGUS.

Lemon-rumped Toucan.

Drawn from Nature & on Stone by J. & E. Gould. *Printed by C. Hullmandel*

RAMPHASTOS CITREOPYGUS.

Lemon-rumped Toucan.

Specific Character.

Ramph. rostro nigro, fasciâ basali culmineque prope basin cæruleo-canis; niger; pectore albo, lutescente parum tincto; fasciâ pectus inter et ventrem latâ crissoque coccineis; caudæ tectricibus superioribus citrinis; orbitæ tarsique plumbei; hi saturatiores.

Bill black, with a broad band of blue grey across the base, advancing for the length of an inch on the culmen; breast white, very faintly tinged with greenish yellow, divided from the belly by a band of scarlet half an inch in width; under tail-coverts scarlet, upper pale lemon yellow; the whole of the remaining plumage black; naked space round the eyes and the feet lead colour, the latter being the darkest.

Total length, 19 inches; *wing*, $9\frac{1}{4}$; *bill*, 5; *tarsi*, $2\frac{1}{2}$; *tail*, 6.

For this fine and hitherto uncharacterized species of Toucan, my warmest thanks are due to W. Swainson, Esq., in whose valuable collection it is deposited, and who most liberally placed it at my disposal for the purpose of figuring, and at the same time allowed me to add a specific name on my own authority. In applying the term *citreopygus* we have been influenced by the difference this species presents from all others in that peculiar character. Mr. Swainson informed me that this bird was originally in the collection of Mr. Bullock, from whom he purchased it, and who stated that he believed it was from Peru.

Independently of the different colour of the upper tail-coverts, it possesses other peculiar characters. In size it equals *Ramph. Cuvieri*, but differs from it in the colouring of the mandibles, and in the bill being much smaller in proportion to the body; the tail is proportionally shorter than is found in any other species, with the exception of *Ramph. Toco*, which in every other respect widely differs from it.

RAMPHASTOS OSCULANS.

Osculant Toucan.

Drawn from Nature & on Stone by W. Swainson

Printed by C. Hullmandel

RAMPHASTOS OSCULANS.

Osculant Toucan.

Ramph. rostro aterrimo, culmine fasciâque intra-basali stramineis : ater ; pectore in medio aurantiaco, latera versus in flavescentem transeunte, gulâ regioneque paroticâ albis ; lineâ pectus posticè cingente crissoque coccineis ; uropygio sulphureo ; orbitæ pedesque cæruleo-plumbei.

Bill fine jet black with a basal margin and broad culmenal band of dull straw yellow ; the ridge round the base of the bill black ; whole of the upper surface jet black with the exception of the upper tail-coverts which are sulphur yellow ; chest orange yellow in the middle fading off into light yellow on its edges, which latter colour is lost in the white which occupies the throat and ear-coverts ; under tail-coverts and a narrow band which bounds the white of the chest scarlet ; the remainder of the under surface and tail black ; feet and naked skin round the eye bluish lead colour.

Total length, 18 inches ; *bill* about $4\frac{1}{2}$; *wings*, $7\frac{1}{2}$; *tail*, $6\frac{1}{2}$; *tarsi*, $1\frac{3}{4}$.

Ramphastos osculans. Gould, Proceedings of Zool. Soc., Part III.

We find in this interesting species of Toucan a union of the peculiar characters of several other species, for which reason I have given it the specific appellative of *osculans*. The bill and upper tail-coverts resemble those parts of *Ramph. culminatus* and *Ramph. Cuvieri* ; the breast is like that of *Ramph. Vitellinus* ; and in the narrow scarlet band on the chest, it bears an affinity to *Ramph. Swainsonii*.

The great variety of colouring which ornaments this new species renders it one of the most pleasing and elegant of the genus : in size it approximates to *Ramph. Vitellinus* and *Ramph. Ariel*.

I am indebted for this fine bird, as also for others, to the treasures of the Vienna collection, which contains two specimens, one fully adult, and another, although in size nearly equal to its companion, evidently a young bird, as was most clearly proved by the undeveloped state of the beak.

The country whence these valuable specimens were brought is stated to be Brazil, but from what particular district I was unable to ascertain.

RAMPHASTOS TOCO. (Linn:)

Toco Toucan.

Printed by C. Hullmandel.

RAMPHASTOS TOCO, *Auct.*

Toco Toucan.

Specific Character.

Ramph. rostro aurantiaco; fasciâ basali maculâque ovali utrinque ad apicem mandibulæ superioris nigris: ater; auribus, gulâ, pectore, caudæque tectricibus superioribus albis; inferioribus coccineis.

Variat *torque angustâ coccineâ.*

Beak rich orange, with a basal band of black, and a broad oval spot of the same colour on each side of the tip of the upper mandible; irides red; eyelids blue; naked space around the eyes red; top of the head and the whole of the plumage deep black, with the exception of the ear-coverts, throat, chest, and upper tail-coverts, which are white, and the under tail-coverts, which are scarlet; tarsi dull blue. In some examples, the white of the chest is bordered by a narrow line of scarlet.

Total length, 27 inches; *bill*, 7½; *wings*, 10; *tail*, 7; *tarsi*, 2.

Toucan de Cayenne, appellé Toco. Buff., Pl. Enl., n. 82.
Ramphastos Toco. Auct.
Le Toco. Levaill., Ois. de Parad., 2. p. 7. t. 2. Azar. n. 50.

This magnificent species is one of the largest of the genus, and is remarkable for possessing a bill perhaps more disproportionate in size than is found in any other, by which circumstance and the rich colouring of the mandibles it may be at once distinguished. I would here also observe, that it seems to differ slightly from the rest of the Toucans, in having an unusually short and square tail, covered at its base by large white feathers. A few years ago this was a species rarely found in cabinets of natural history; latterly, however, it has been brought over more abundantly, and may now be met with in every museum of any extent. Though the *Ramphastos Toco* has the widest range of any species, being distributed throughout the whole of the wooded districts from the River Plate to Guiana, it is but thinly dispersed, and, according to the information afforded me by my friend Dr. Such, is extremely shy, and not procured without considerable difficulty, keeping to the tops of the highest trees, and exercising the utmost wariness and caution.

As with the rest of the genus, fruits compose the principal part of its food, and among these, it is said to be extremely partial to the banana.

The sexes offer little or no difference in colour, but the female may be always distinguished by her smaller size, and the comparatively inferior dimensions of the beak. The general colours of the young are also similar, but the beak is of course less developed, and is a considerable time before it attains its rich colouring and perfect size.

RAMPHASTOS CARINATUS, (Swains.)
Sharp-billed Toucan.

Drawn from Nature & on Stone by J. & E. Gould.

Printed by C. Hullmandel.

RAMPHASTOS CARINATUS, *Swainson.*

Sharp-billed Toucan.

Specific Character.

Ramph. rostro elongato, compresso, fasciâ angustâ nigrâ basali circumdato, apice sanguineo; mandibulâ superiore viridi, culmine maculâque utrinque aurantio-flavis; inferiore cœruleâ viridi tinctâ: ater, nitidus, cervice rufo parùm tincto; gutture pectoreque luteis; fasciâ pectorali tectricibusque caudæ inferioribus coccineis; uropygio albo.

Beak very long and compressed laterally, with a narrow marginal band of black at the base; upper mandible green, with a spot of orange yellow on each side and a line of the same colour extending along the culmen throughout its whole length; lower mandible blue shaded with green; tips red; naked skin round the eye, tarsus, and toes violet; eyes light green; throat and breast delicate lemon yellow; pectoral band and under tail-coverts scarlet; uropygium white; the remainder of the plumage shining black, with a slight tinge of rufous on the back of the neck.

Total length, 20 inches; *bill*, 6.

Brazilian Pie. Edw., vol. 2. t. 64.
Yellow-breasted Toucan. Edw., vol. 3. p. 253. t. 329, (adult).
Ramphastos Tucanus.? Shaw, Gen. Zool., vol. 8. p. 362.
Ramphastos carinatus. Swains., Zool. Illus., vol. 1. pl. 45.

There are at present only two or three examples of this species of Toucan in the Museums of this country. The Royal collection at Berlin, however, afforded the opportunity of examining a series of specimens at one view, the minute inspection of which convinced me that, like most other species, especially those whose beaks are characterized by a variety of delicate tints, the colours of the mandibles of the present species, as well as the naked skin round the eye, undergo considerable change after death; still it is easy to observe that the original colour is very different in different individuals, whence I am led to conclude that the colours of the beak are greatly influenced by the season of the year, and are doubtless in the finest and most brilliant state during the time of pairing. In some examples the orange spot on the sides of the bill is almost wanting, and in others divided into a succession of small ones, or dilated into a broad band, occupying nearly the whole length of the mandible; but notwithstanding these variations, the present bird possesses specific characters which readily distinguish it; these consist of the carinated form of the upper mandible, the culmen of which is invariably yellow, bordered round its base by a narrow edging of black.

It is certain that Edwards saw this bird in a living state in the year 1759, and described it under the name of the Yellow-breasted Toucan. His details and figure are characterized by the accuracy which is usually found in the writings of that talented naturalist: he states that it was brought to this country from Jamaica, where it was in all probability received from the adjacent continent. Speaking of its bill, he observes, that the drawing from life of one bird of this genus is worth ten from dead specimens, as the bills always lose, after death, their natural beautiful hues. In vol. 2, pl. 64, is another drawing and description of a Toucan, which he has called the Brazilian Pie. This bird was also received from Jamaica, and in my opinion is identical with the present species, from which it is only distinguished by the colour of the throat, which is white or cream-colour, the result in all probability of disease or weakness. Mr. Swainson is the only author who has done strict justice to the present bird since the days of Edwards, by publishing a reduced figure in his "Zoological Illustrations"; but although he quotes Edwards as the first who has noticed this bird, he is silent as to the other figure alluded to. It is not figured by Le Vaillant.

The specimens in the Zoological Society's Museum and in the Berlin collection are from the southern provinces of Mexico, which may be considered its true and natural habitat.

It is called *Pito canoa* by the inhabitants of Mexico.

RAMPHASTOS SWAINSONII.
Swainson's Toucan.

RAMPHASTOS SWAINSONII.

Swainson's Toucan.

Specific Character.

Ramph. mandibulæ superioris basi infernè inferiorisque basi totâ rufis; hujus apice lineâque obliquâ a rictu ad frontem extensâ nigris; superioris culmine parteque anticâ flavis: ater, vertice nuchâque rufo parum tinctis; gutture lutescenti-flavo, abdomen versus lineâ albâ alterâque coccineâ cincto; tectricibus caudæ superioribus albis, inferioribus coccineis.

Rostrum pro tempestate bicolor tantum; mandibulâ inferiore superioreque obliquè et infernè basin versus nigris; hac ad apicem supernèque flavâ.

The base of the lower part of the upper mandible, as well as the entire base of the under, is of a rich salmon colour, bounded by a narrow line of black on the former, the point of the lower being entirely black; the remainder of the upper mandible, from the forehead to the point, of a rich orange yellow; throat lemon yellow bounded on the breast by a narrow band of white, which is succeeded by a broader one of scarlet; the head, the back of the neck, the whole of the upper and under surface, deep black; under tail-coverts scarlet, upper ones white; legs and feet lead colour.

In a different season the salmon colour towards the base of the mandibles is entirely wanting, its place being occupied by a dull black, only less intense than that of the oblique line which borders it.

Total length, 18 inches; *tail*, $6\frac{1}{4}$; *wings*, 9; *tarsi*, $1\frac{5}{8}$; length of the *bill*, $5\frac{1}{4}$ to 6.

Tocard? Le Vaill., Ois. de Parad., vol. 2. pl. 9.

Ramphastos ambiguus? Swains., Zool. Illus., pl. 168.

Ramphastos Swainsonii. Gould, Proceedings of the Zool. Soc., part 1. p. 69.

The changes which the colours of the bill undergo in this race of birds during the living state are at length beginning to be understood; and the present species is well adapted to illustrate the extent of variation which occurs, probably at different seasons. Were it not for a knowledge of these changes, the birds in the Plate before us might be regarded as two species; but their identity is fully proved by a series of specimens in my possession, which exhibit a gradual transition from one colour to the other.

From the *Ramphastos ambiguus* of Mr. Swainson, a species which I have referred to with doubt as synonymous with the present, the distinction rests on the less extension forwards of the black of the upper mandible. In the figure published by that gentleman, the black of the lower margin of the bill reaches to the tip, and gives off near its anterior part small subtransverse bars of the same colour. In the present species, on the contrary, the black stops short of the tip fully one third of the length of the bill; and the bars are absent. Mr. Swainson's figure also represents an oblique dash of green on the side of the bill; but this is probably of no importance, and depends on incipient change after death in the brilliant yellow of that part: in one of my specimens there are on one side irregular blotches of green which are entirely wanting on the other. In all other respects the closest resemblance obtains between the two birds.

I am not aware that any specimen of Mr. Swainson's bird is in existence. His authority for it was a drawing (stated to have been taken from the bird just dead,) by an unknown artist, for whose general accuracy, however, he was enabled to vouch. It is barely possible that a slip of the pencil may have produced the difference of colouring which has just been pointed out; but this would be an assumption on which I am not disposed to rely. I therefore regard the present bird as distinct. In dedicating it to Mr. Swainson, I trust that he will receive it as a testimony of the high estimation I entertain for his scientific attainments in the studies of nature and his researches in this particular group.

The Tocard of Le Vaillant represents a state of plumage I have never seen. It agrees with the present bird in every respect except in the colour of the throat and chest, which is represented as white. It is most probable that this is owing to the fading of the delicate lemon yellow of that part in an individual of the present species, perhaps from exposure to air or to a strong light.

The *R. Swainsonii* was received by me from Mr. Christie of Popayan, in Columbia: I have also received a specimen from South Mexico. Its habitat appears extended along the Andes and the diverging chains intervening between those places.

RAMPHASTOS VITELLINUS, (Illiger).

Sulphur-and-white-breasted Toucan.

Drawn from Nature & on Stone by J. & E. Gould.

Printed by C. Enkmandel.

RAMPHASTOS VITELLINUS, *Illiger.*

Sulphur-and-white-breasted Toucan.

Specific Character.

Ramph. rostro nigro, fasciâ basali cæruleo-canâ posticè lineâ nigrâ cinctâ: niger; pectore aurantiaco-flavo in album ad latera et anticè transeunte; torque pectorali caudæque tectricibus coccineis.

Beak black, with a basal band of greyish blue bounded posteriorly by a narrow band of black; naked space round the eye blueish lead colour; general plumage black; breast orange yellow in the centre, becoming gradually paler towards the side, where it is quite white, especially on the cheeks and throat; the orange colour of the breast is bounded by a pectoral band of scarlet, the upper and under tail-coverts being of the same colour.

Total length, 17 or 18 inches; *bill*, 5; *wings*, 7; *tail*, $6\frac{1}{2}$; *tarsi*, $1\frac{3}{4}$.

Le Pignancoin. Levaill., Ois. de Parad., vol. 2. pl. 7.
Ramphastos vitellinus. Illig.—Lichtenst.—Swains., Zool. Illust., vol. 1. p. 56.

Were it not that the blue band at the base of the beak fades immediately after death, the present species would be easily distinguished: independently of this, however, the white ear-coverts and sides of the chest are sufficiently characteristic to distinguish it from all others. It appears to have been separated from the rest of its genus by Illiger, and has been figured by Mr. Swainson in his "Zoological Illustrations." It inhabits Surinam, Cayenne, Guiana, and the borders of the Amazon, in which countries its beautiful yellow chest is held in high esteem by the natives, by whom its skin is often prepared for ornaments.

RAMPHASTOS ARIEL, (Vig.).

TUCANUS, (Linn.?)

Ariel Toucan.

Drawn from Nature & on Stone by J.E. Gould

Printed & Published by Taylor & Francis

RAMPHASTOS ARIEL, *Vigors.*

——————— TUCANUS, *Linné?*

Ariel Toucan.

Specific Character.

Ramph. rostro nigro, fasciâ basali sulphureâ, culmine ad basin cæruleo: ater; gulâ genis guttureque aurantio-luteis, hujus margine inferiore sulphureo, regione periophthalmica nuda miniaceâ, fasciâ pectorali crisso uropygioque coccineis.

Beak black, with a basal band of rich yellow; culmen for half its length greyish blue; throat and breast rich orange yellow, becoming paler on its outer edges; below the orange of the breast extends a narrow belt of straw yellow, which is succeeded by a broader one of scarlet, which is the colour of the upper and under tail-coverts; the whole of the remaining plumage of both the upper and under surface of a profound black; bare skin round the eye scarlet; irides blue; tarsi lead colour.

Total length, 18 inches; *wings*, $7\frac{1}{2}$; *tail*, $6\frac{1}{2}$; *tarsi*, $1\frac{3}{4}$.

Ramphastos Tucanus. Linn.?
Le Toucan de Para de l'Amérique méridionale. Vieill., Gal. des Ois., Suppl.
Toucan Brasiliensis gutture luteo? Briss., Orn., vol. 4. p. 419. pl. 32. fig. 1.
Le Toucan à gorge jaune du Brésil. Buff., Pl. Enl. n. 307.
Ramphastos Temminckii? Wagler, Syst. Avium.
——————— *Ariel.* Vigors, in Zool. Journ., vol. 2. p. 466.

There is no one species of the family of Toucans that is more common in our museums, or better known, than the present; yet, strange to say, none is involved in greater confusion: and this confusion appears to have arisen from one author having taken his characters from the description of another, without having instituted any examination for himself. Instead of going into a detailed history of this tissue of confusion, I would rather refer my readers to the elaborate paper on the subject by N. A. Vigors, Esq., M.P., in the "Zoological Journal," vol. 2. p. 466. For myself, I cannot help suspecting that, notwithstanding the yellow upper tail-coverts described by Linnæus as characteristic of *Ramphastos Tucanus*, the present bird is in reality identical with that species; and I am the more inclined to believe this, as no such bird exists in any museum, as far as I have been able to ascertain. However, upon referring to the works of Linnæus, Brisson, and Wagler, the reader may satisfy himself respecting the uncertainty which hangs over the nomenclature of the bird in question.

An example of this beautiful species lived in the possession of Mr. Vigors for eight years.

It is extremely common in the Brazils, whence it is dispersed throughout the greater part of South America.

RAMPHASTOS DICOLORUS, (Linn:).
Red breasted Toucan

Tra-n-ron Slatter & en Stone l..'d.'. Jacks

Printed by J. Huismans

RAMPHASTOS DICOLORUS, *Linné.*

Red-breasted Toucan.

Specific Character.

Ramph. rostro luteo, marginibus serratis rubris, fasciâ latâ basali nigrâ: ater chalybeo splendens; pectore aurantiaco, lineâ sulphureâ cincto; abdomine caudæque tectricibus coccineis.

Beak greenish yellow with red serrated edges, the base of both mandibles surrounded by a broad band of black; naked skin round the eye red; the upper parts of the body, wings, tail, thighs and vent, black with steel blue reflections; centre of the breast bright orange encircled by a band of delicate primrose yellow; the belly, upper and under tail-coverts rich scarlet red; feet and legs blueish lead colour.

Total length, from 14 to 17 inches; length of *bill* from $2\frac{3}{4}$ to $3\frac{3}{4}$, breadth at base $1\frac{1}{8}$; *wing*, 7; *tail*, $6\frac{1}{2}$; *tarsus*, $1\frac{7}{8}$.

Ramphastos dicolorus. Gm. Linn., p. 556. Lath., Ind. Orn., p. 135. 2. Turton, vol. 1. p. 211. Swains., Zool. Illus., vol. 2. pl. 108. Jard. & Selby, Illus. of Orn., vol. 1. pl. xxix.

Yellow-throated Toucan. Lath., Syn., 1. 325., Gen. Hist. Birds, vol. 2. p. 282. Turton, vol. 1. p. 211. Brisson, Orn., tom. 4. p. 411. pl. 31. f. 1. Buffon, Pl. Enl., 269.

Le petit Toucan à ventre rouge. Le Vaill., Hist. Nat. des Toucans, pl. 8.

Le Tucai. Azar., Voy., 3. p. 143. n. 51. Wagler, Syst. Avium.

Ramphastos Tucai. Lichtenst., Catal., p. 7.

Ramphastos chlororhynchus. Temm., Man. d'Orn.

Ornithologists of the present day are induced to consider the bird here figured as referrible to the *Ramphastos dicolorus* of Linnæus; and without venturing to question the accuracy of this opinion, it must nevertheless be observed that the specific term is somewhat inapplicable to a bird possessing three decided and conspicuous colours. This species has been illustrated by Sir W. Jardine and Mr. Selby, in their valuable "Illustrations of Ornithology," as a typical example of the true Toucans; in which publication will also be found a somewhat lengthened description, as well as an account of the general habits and manners, of the species comprising this family.

The *Ramphastos dicolorus* may be readily distinguished from all other species by several prominent characters. It is the smallest of the genus, and in the colour and development of the bill much variety exists.

To the want of opportunity of examining a series of specimens at one time may be attributed the confusion in the nomenclature with respect to this bird. I am fully persuaded, however, that these changes are entirely attendant on age, sex, or season. The females have always the shorter bill and rather less brilliant colouring, offering also in stature the same disproportion, independent of which no other external differences are to be discovered, and these even are so trifling as scarcely to indicate the female without actual dissection.

The young bird, which is represented in the lower figure, is barely arrived at that period at which it is capable of providing for its own wants; the bill at this age is extremely delicate in texture, and is so soft and yielding as to require food of the most pulpy and nutritious nature, in all probability fruits, larvæ of insects, &c. Even at this youthful stage the plumage has assumed its perfect colouring, and the tints are scarcely less brilliant than those of the adult: in this particular the family of *Ramphastidæ* closely resemble the *Fissirostral* birds, and like them lay white eggs, and incubate in holes or dark recesses.

The present species is extensively spread over the Brazils. It has been received from Rio de Janeiro, Bahia, and Paraguay.

Genus Pteroglossus, *Illiger*.

Characteres Generici.

Rostrum capite longius, crassum, inane, cultratum, margine basali incrassato; maxillæ angulo frontali obtuso: tomia serrata: nares superæ in maxillæ basi: lingua angusta, pennacea. Cauda elongata, cuneata.

Bill longer than the head, thick, light, curved, thickened at the basal margin; the frontal angle obtuse; the margins serrated. *Nostrils* nearly vertical, situated on the base of the bill. *Tongue* long, slender, feathered. *Tail* elongated, cuneated.

PTEROGLOSSUS ARAÇARI.

Cayenne Araçari.

Drawn from Nature & on Stone by J. & E. Gould.

Printed by C. Hullmandel.

PTEROGLOSSUS ARACARI, *Auct.*

Cayenne Araçari.

Specific Character.

Pter. mandibulâ superiore pallidè stramineâ, maculâ latâ culminali nigrâ; inferiore nigrâ; fasciâ basali angustâ, albâ: suprà olivaceo-viridis, subtùs flavus; uropygio, abdomine latè, torqueque angustâ interruptâ pectorali coccineis; capite colloque nigris.

Beak, upper mandible pale straw white, with a broad black culminal mark, the edges slightly serrated; the lower mandible black; both are surrounded by a narrow basal belt of white; head and throat black; the whole of the upper surface olive green, with the exception of the rump, which is red; under surface fine yellow, with a broad abdominal band of scarlet and indications of an interrupted line of the same colour bordering the black of the throat; thighs dull olive, largely blotched with reddish brown.

Total length, 18 to 19 inches; *bill*, 4 to 5; *wing*, 6; *tail*, $7\frac{1}{4}$; *tarsi*, $1\frac{5}{8}$.

Ramphastos Aracari. Auct.

L'Araçari à ceinture rouge. Levaill., Ois. de Parad., 2. p. 29. t. 20.

I am at a loss to determine whether the present bird, which is a native of Cayenne and Guiana, be identical with one from the Brazils, and which, although closely resembling it in colour and size, invariably possesses minute characters which at once indicate its country. The variation to which I allude consists in the following particulars. The examples from Cayenne have the mandible more attenuated and hooked, the teeth more defined, and the black mark on the culmen much more expanded; the black of the throat is bounded by an interrupted line of fine red, which, though it is to be traced in the other, is much more obscure; the thighs also in the present species are dull olive green, with strong dashes of reddish brown, which in many specimens predominates so as to obscure the green entirely. In the Brazilian examples, the thighs are wholly green, added to which I have invariably found the present bird to be somewhat larger in size. Whether these distinctions amount to specific differences, or are to be considered only as variations depending on difference of climate and other local circumstances, is a question not easy to determine. I am inclined, however, to believe that their being constant and unvarying, forms a good argument for supposing them to be truly distinct: be this as it may, I consider this as the first described, and consequently the one to which the term *Aracari* exclusively belongs.

On turning to the valuable work of Levaillant, we find him censuring Buffon for confounding the present with a totally different species, the *Pteroglossus viridis*, and immediately afterwards doubting whether the present bird and one from Peru, with an additional narrow belt of black across the chest (the *Araçari à double ceinture*), be merely varieties or actual species. This Peruvian bird is not, I believe, in existence, nor has any other specimen been seen or described. If, however, the drawing be correct, I have no hesitation in saying it is distinct, and we have yet to look for it as the reward of future exertions. Levaillant informs us that the *P. Aracari* abounds in Guiana, where it makes great havock in the plantations of bananas, guavas, and even of coffee.

I am indebted to Lord Stanley for a specimen of the immature bird, which is extremely valuable, as showing that the young, like the genuine Toucans, acquire the mature colouring of the plumage at an early age, long before the beak is fully developed, or has attained its particoloured hues.

It inhabits Cayenne and Guiana.

PTEROGLOSSUS CASTINOTUS.

Chestnut-eared Araçari.

Drawn from Nature & on Stone by J & E. Gould.

Printed by C. Hullmandel

PTEROGLOSSUS CASTANOTIS.

Chestnut-eared Araçari.

Specific Character.

Pter. rostro depresso; mandibulâ superiore stramineâ, culmine latè nisi ad apicem maculâque triangulari utrinque nigris; tomiis profundè dentatis, interstitiis nigris; mandibulâ inferiore nigrâ; fasciâ basali flavâ: suprà olivaceo-viridis, subtùs sulphureus; capite guttureque nigris; regione paroticâ femoribusque saturatè castaneis; uropygio, interscapulio, abdominisque fasciâ latâ coccineis; tectricibus caudæ inferioribus sordidè flavis; remigibus brunneis.

Beak depressed, of a deep straw yellow, with a broad triangular mark of black along its *culmen* for two thirds of its length, and a nearly similar mark of black on each side; its edges are strongly dentated, the intervals between the notches being black; the under mandible is black throughout; an abrupt line of yellow surrounds the base of the beak; crown of the head, sides of the neck, and throat black; ear-coverts rich dark chestnut; whole of the upper surface, wings and tail dark olive green; the whole of the under surface, with the exception of a rich band of scarlet which crosses the breast, of a rich lemon yellow, with a few slight dashes of scarlet on the breast and under tail-coverts; upper tail-coverts scarlet; thighs chestnut; tarsi dark lead colour.

Total length, 17½ inches; *bill*, 5; *wings*, 6¼; *tail*, 7½; *tarsi*, 1⅜.

Pteroglossus castanotis. Gould, Proceedings of the Zool. Soc., Part I. p. 119.

It is not a little remarkable that in a group of birds so limited as the present, so many species, hitherto undescribed, should reward the researches which the Monograph has called me to institute. I here introduce another new species to the notice of the scientific, which approaches in its general form and colours to the *Pteroglossus Araçari*. It is but recently that I became possessed of this fine species, a notice of which, together with its specific characters, will be found in the "Proceedings of the Zoological Society," Part I. p. 119. Its habitat is Brazil, and I would again remark, that if in a country like that, which has been well explored, new species are continually discovered to reward the researches of science, how much more may we not expect from a laborious scrutiny of those countries of the New World not yet visited by the scientific labourer! Although I have designated this bird *castanotis*, a title which clearly indicated the bird in my possession, yet on examining a specimen of the same species in the Royal Museum of Paris, I found the chestnut, which covers the ears only in my specimen, extending round the throat; but whether this difference is the result of age, sex, or season, the limited knowledge I have of the species does not enable me to determine. The Paris specimen had the name of *P. bitorquatus* attached to the pedestal on which it was mounted; but the true *P. bitorquatus*, for which this bird appeared to have been mistaken, was not in the collection.

PTEROGLOSSUS REGALIS, (Lichtenst:)
Royal Araçari.

PTEROGLOSSUS REGALIS, *Lichtenstein.*

Royal Araçari.

Specific Character.

Pter. mandibulâ superiore stramineâ, nigro serratâ, culmine nigro; inferiore nigrâ, fasciâ angustâ stramineâ: olivaceo-viridis; capite colloque aterrimis; cervice fasciâ lunatâ castaneâ posticè cinctâ; gutture posticè coccineo obscurè marginato; corpore infrà flavo, sanguineo maculatâ; pectoris maculâ aterrimâ, fasciâque atrâ posticâ coccineo marginatâ; tectricibus caudæ inferioribus obscurè flavis; uropygii fasciâ coccineâ; remigibus brunneis.

Upper mandible straw yellow, the culmen and serratures black, under mandible black with a basal edge of straw yellow; head, neck, and throat deep black; a semilunar mark of chestnut bounds the back of the neck; the whole of the upper surface and tail olive green; the quill-feathers brown; band across the rump scarlet; the black margin of the upper part of the chest is obscurely edged with scarlet, below which on the centre of the breast is a deep black mark, and below this again a black band edged with scarlet; thighs rufous; ground colour of the under surface of a fine gamboge yellow with numerous stains as if of blood; under tail-coverts dull yellow.

Total length, from 15 to 17 inches; *beak*, 4 to 4½.

The only example of this bird which I have had an opportunity of examining, was in the Royal Museum at Berlin. It is characterized, by M. Lichtenstein as differing in many essential particulars from *P. Araçari*, which is, however, the only species it could ever be confounded with; but from this it may at once be distinguished by the black bands on the chest, the lunar-shaped mark on the back of the neck, and rufous thighs, none of which characters are possessed by the latter. In general size and stature, the two birds agree as closely as possible. Although the present is the first figure of the *P. regalis* which has been published, it has in all probability been for some time known on the Continent, but confounded with *P. Araçari*, of which it may be observed that Dr. Latham, in his "General History of Birds," makes it the variety A. The habitat, however, of these two birds appears to be very different; the *P. regalis* being an inhabitant of Mexico, while the *P. Araçari* is confined to the Brazils. Both birds are equally typical of the genus, and in all probability similar in general habits and manners.

Called *Pretto réal* by the Spanish people in Mexico.

Drawn from Nature & on stone by J. & E. Gould.

PTEROGLOSSUS PLURICINCTUS.
Many-banded Araçari.

Printed by C. Hullmandel.

PTEROGLOSSUS PLURICINCTUS.

Many-banded Araçari.

Specific Character.

Mas. *Pter. rostro ad basin lineâ elevatâ flavâ cincto; culmine, lineâ mandibulæ superioris intrabasali, mandibulâque inferiore nigris; mandibulæ superioris lateribus aurantiaco-flavis, in flavescenti-albidum apicem versus transeuntibus: olivaceo-viridis; capite, gulâ, gutture gastræique fasciis duabus latis, nigris; gastræo anticè flavo, coccineo maculato, posticè uropygioque coccineis; crisso pallidè flavo; orbitæ pedesque saturatè plumbei.*

Fœm. *Regione paroticâ brunneâ; gutture posticè coccineo cincto.*

Male. A broad band of black advances from the nostrils along the whole of the culmen and forms a narrow belt down the sides of the upper mandible at its base; the elevated basal margin of the bill is yellow; the sides of the upper mandible beautiful orange yellow, fading into yellowish white towards the tip; under mandible wholly black with a yellow basal ridge; head, neck, and chest black; whole of the upper surface, except the rump, which is scarlet, dark olive green; breast marked with two broad bands of black, the upper separated from the throat by an intervening space of yellow dashed with red; a similar but broader space separates the two bands of black, the lower of which is bounded by scarlet, advancing as far as the thighs, which are brownish olive; under tail-coverts light yellow; naked space round the eyes, tarsi, and feet dark lead colour.

Female. Differs from the male in having the ear-coverts brown and a narrow belt of scarlet bordering the black of the throat.

Total length, 20 inches; *bill*, $4\frac{1}{2}$; *wings*, $6\frac{1}{2}$; *tail*, $8\frac{1}{4}$.

Pteroglossus pluricinctus, Gould, Proceedings of Zool. Soc., Part III.

Although I have not been able to see the identical bird which Le Vaillant described and figured under the title of *L'Araçari à double ceinture*, and which was considered by that naturalist as merely a variety of the Common Araçari (*Pter. Aracari*), still I am induced to believe that it is identical with the present species. The extreme rarity of the bird, and the consequent small number of specimens that have reached Europe, will in some degree account for the neglect of subsequent writers, who appear either to have entirely overlooked it, or to have taken Le Vaillant's opinion as well grounded. If, however, other observers had had the opportunity which I have possessed of examining several specimens, they would, I doubt not, have come to the same conclusion as myself, and consider it to be not only a distinct species, but one of the most beautiful of the group to which it belongs. I can only attribute Le Vaillant's error to the circumstance of his having most probably seen not more than one or two specimens, and those most likely in an inferior condition. Beautiful examples of both sexes form part of the Brazilian collection at Vienna: the sexes were ascertained by actual dissection by the celebrated naturalist M. Natterer, who obtained them in the remote districts of the Brazilian territory.

PTEROGLOSSUS BITORQUATUS; (Vig.)
Double collared Araçari.

PTEROGLOSSUS BITORQUATUS, *Vigors.*

Double-collared Araçari.

Specific Character.

Pter. mandibulâ superiore albescenti-flavâ; inferiore albidâ, fasciâ obliquâ apicali nigrâ: capite nigro; dorso, alis, caudâque olivaceo-viridibus; gulâ guttureque castaneis, hôc subtus nigro-marginato; torque pectorali angustâ, abdomine, crissoque sulphureis; pectore, nuchâ, uropygioque coccineis.

Upper mandible whitish yellow, lower white with a black oblique fascia at the apex; upper surface olive green; top of the head black; throat and sides of the neck chestnut, terminated by a narrow black pectoral band, below which is a similar one of yellow; breast, back of the neck, and rump scarlet; abdomen and under tail-coverts sulphur yellow; thighs olive green.

Total length, 14 inches; *bill*, 3.

Pteroglossus bitorquatus. Vig., in Zool. Journ., vol. 2. p. 481.

The first and only notice of this bird, as far as I am aware, is the one which appeared in the second volume of the "Zoological Journal," as above quoted. It is there characterized as a species new to science, by Mr. Vigors, from a fine specimen in his possession, but since transferred with the whole of his collection to the Museum of the Zoological Society of London. From the two narrow bands, one of yellow, the other of black, which partially surround the chest, it received the specific name of *bitorquatus*, though these colours are but partial.

The *Pteroglossus bitorquatus* is remarkable, not only for its beauty and elegance of form, but also for its extreme rarity. The only individuals I have ever had an opportunity of examining, were, the specimen from which the original description was taken; a second, similar in all its characters to the former, which was kindly transmitted for my inspection by Lord Stanley; and a third in the Museum at Berlin: the last differed in one point from the preceding ones, in wanting the yellow pectoral band, the black edging of the chestnut throat being succeeded by scarlet; whether this slight difference is to be regarded as dependent upon sex, age, or season, or whether it is an accidental circumstance, the limited knowledge I possess of the species prevents my being able to ascertain with satisfaction.

In point of affinity it is somewhat allied to the *Pteroglossus ulocomus*, possessing as it does a style of colouring extremely similar; and the head, although destitute of the curled appendages, is covered with black feathers differing from the rest of the plumage, the shafts being glossy and bristle-like. This affinity is by no means surprising, as we might naturally expect that a character so remarkable as the curled crest of the *P. ulocomus* would not be given to one species without traces appearing in different degrees in others, abruptness even in the slightest details being ever repugnant to nature; and, relying upon these principles, we may reasonably anticipate the discovery of species forming a regular graduated series.

Inhabits Guiana and the Spanish Main.

PTEROGLOSSUS AZARA; (Le Vaill:)
Banded Araçari.

Drawn from Nature & on Stone by J. & E. Gould.

Printed by C. Hullmandel

PTEROGLOSSUS AZARÆ, *Wagler.*

Banded Araçari.

Specific Character.

Pter. rostro stramineo; mandibulâ superiore pallidiore, nigro serratâ: olivaceo-viridis; capite nigro; auribus gulâque saturatè castaneis, hac nigro posticè cinctâ; gutture coccineo; torque pectorali latâ, anticè nigrâ, posticè angustè coccineâ; ventre flavo; crisso coccineo.

Bill clear straw yellow, the upper mandible being the palest, and the serratures of its edges marked by dashes of black; top of the head and occiput black; throat and ear-coverts deep mahogany brown, below which extends a semilunar band of black; to this succeeds a broad belt of scarlet, followed by a similar band of jet black, to this again a narrow band of scarlet; thighs olive green; the rest of the under surface yellow; upper surface olive green, with the exception of the rump, which is scarlet.

Total length, 15 inches.

L'Araçari Azara. Levaill., Ois. de Parad., Supp. p. 40. t. A. [cited by Wagler.]
Ramphastos Azara. Vieill., Nouv. Dict. d'Hist. Nat., t. 34. p. 282.
Pteroglossus Azaræ. Wagler, Syst. Avium.

Two examples of this truly beautiful Araçari adorn the national museum of France, which, with one in the Munich collection, are, as far as I have been able to ascertain, the only specimens in Europe. In the year 1825, M. Vieillot published a figure and description of this bird taken, as he himself informs us, from a single individual in the gallery of the Muséum d'Histoire Naturelle; from which it is apparent that the second specimen alluded to, and which is by far the finest, as M. Vieillot's figure proves, has been subsequently acquired. From the extreme rarity in England of the Supplement to Levaillant's Work, cited by Wagler as containing a figure of this bird, I have never been able to see the Plate referred to.

I visited Paris purposely to inspect and make a drawing of the specimens of this rare bird, in order to assure myself of their specific value, and their relative affinities in the group to which they belong. The alternate bands of red and black which ornament the breast, together with the uniform colour of the bill, the serratures of which alone are marked out with black, at once distinguish it from every other *Pteroglossus*. It may, however, be observed, that in the specimen from which M. Vieillot took his figure, a broad dusky dash extends from the base of the upper mandible nearly two thirds of its length, diminishing as it proceeds towards the point. It is not clear to me that this indistinct mark is not the indication of an immature bird, or it may perhaps be caused by some decomposition after death, the rest of the colouring being neither so fine nor so brilliant. I would also remark, that the lower band of scarlet is only slightly indicated.

The nearest allied species at present discovered is the *Pteroglossus bitorquatus*; but from this it may at once be distinguished by the alternate bands across the chest.

Wagler informs us that the habitat of this bird is Brazil, where it is extremely rare.

PTEROGLOSSUS FLOCONUS.
Curl crested Araçari.

Printed by C. Hullmandel.

PTEROGLOSSUS ULOCOMUS.

Curl-crested Araçari.

Specific Character.

Pter. rostro elongato, mandibulis albo serratis, ad basin fasciâ angustâ castaneâ circumdatis; superioris culmine aurantiaco lineâ sordidè cæruleâ utrinque marginato, lateribus aurantio-rubris; inferiore stramineâ, in aurantiacum ad apicem vergente; naribus lineâ albâ cinctis: plumis capitis, genarum, nuchæque foliiferis, illius crispis nigris, harum spatulatis, genarum stramineis nigro apiculatis; cervice, dorso, pectorisque lateribus coccineis; alis, caudâ, femoribusque olivaceis; remigibus brunneis; gulâ, pectore, abdominis medio crissoque flavescentibus, pectoris plumis coccineo marginatis.

Beak lengthened, both mandibles edged with thickly set white serratures; the upper has the culmen orange, bordered by a narrow longitudinal stripe of dull blue extending nearly to the tip, below which the sides of the mandible are fine orange red; a white line surrounds the apertures of the nostrils; the under mandible is straw-coloured, becoming orange at the tip; a narrow band of rich chestnut encircles both mandibles at their base; crown of the head covered with a crest of curled metal-like feathers, without barbs, of an intense black and very glossy; as they approach the occiput these appendages gradually lose their curled character and become straight, narrow and spatulate. The feathers of the cheeks have the latter form, but are more decidedly spatulate; their colour is yellowish white, each having its extremity tipped with black; occiput and upper tail-coverts deep blood red; chest delicate yellow, with slight crescent-shaped bars of red; sides yellow richly stained with red; back, tail and thighs olive green; quills brown; tarsi lead colour.

Total length, 18 inches; *bill*, 4; *wings*, $5\frac{3}{4}$; *tail*, $7\frac{1}{2}$; *tarsi*, $2\frac{1}{4}$.

Pteroglossus ulocomus. Gould, Proceedings of the Zool. Soc., Part 1. p. 38.

Abundant as are the treasures which science has received from the Brazils, the valuable addition of this beautiful bird to our ornithological stores, further illustrates the riches of that luxuriant portion of tropical America, and also confirms the opinion long entertained, that there are yet many rarities to be discovered in its extensive forests. Although our collections already abound with the productions of districts adjacent to cities and of easy access, such is not the case as it regards the almost unexplored districts of the interior, whence we only occasionally derive specimens, proving how much we are yet ignorant of, and how much remains for future discovery.

Interested as I have always been with this singular family, it was with no small degree of pleasure that I hailed the arrival of so fine a species, particularly as it offers to our observance in the covering of its head a feature entirely new among the *Pteroglossi*. I regret that it is beyond the efforts of our pencil to do strict justice to the rich appearance of these glossy and curiously curled appendages, which in substance can only be compared to the metal-like feathers found in some species of the *Gallinæ*,—the extreme ends of the neck- and wing-feathers of the *Gallus Sonnerati*, Temm., for instance. This structure appears to consist in a dilatation of the shaft of each feather, or perhaps an agglutination of the web into one mass.

Two examples of this species formed part of a collection of rare birds brought to this country from Rio de Janeiro. Of these I was so fortunate as to obtain the finest, which is in all probability a male: it is now in the Museum of the Zoological Society of London. The other, which is considered a female, is preserved in the British Museum.

The habitat of this species is probably in the almost untrodden forests which border the river Amazon, as, since the arrival of the pair alluded to, I have seen a third, having a label attached intimating that it was received from Para.

PTEROGLOSSUS HYPOGRAMMICUS

Grey breasted Aracari

Published by Robert Havell, Junr. & Co. 1834

PTEROGLOSSUS HYPOGLAUCUS.

Grey-breasted Araçari.

Specific Character.

Pter. mandibulis lineâ flavâ basali circumdatis, maculâque triangulari subbasali nigrâ plagâque flavâ nigro marginatâ notatis; superioris culmine lateribusque antrorsum saturatè sanguineis; inferiore, nisi basin versus, atrâ: olivaceo-brunneus, subtùs cæruleo-canus; capite caudâque nigris, rectricibus quatuor intermediis ad apicem brunneis; remigum pogoniis externis viridibus, internis brunneis; uropygio lutescente; tectricibus caudæ superioribus viridi-olivaceis, inferioribus coccineis.

Beak; the upper mandible edged on its basal aspect with a narrow line of yellow succeeded by a triangular spot of black, an irregular mark of yellow next succeeds edged by a line of black, the culmen and the remainder of the sides deep blood red; the basal half of the lower mandible has the yellow and black colouring of the upper, but terminates in deep black instead of red; crown of the head and occiput black; back, shoulders, and thighs rich olive brown; outer edges of the quills green; inner brown; rump light greenish yellow; upper tail-coverts greenish olive; tail black, the four middle feathers tipped with brown; under tail-coverts scarlet; whole of the neck, chest, and under parts silvery grey.

Total length, 18¼ inches; *beak*, 4 long, depth, 1¼, breadth at base, 1¼; *wing*, 6¾; *tail*, 7; *tarsus*, 1¾.

Pteroglossus hypoglaucus. Gould, Proceedings of Zool. Soc., part 1. p. 70.

In the disposition of its markings, and the general colour and texture of its plumage, this singular Araçari differs remarkably from all others yet discovered; the beak being more brilliant, and the plumage of the body less ostentatious and gaudy. Nor does it present a less striking difference in its habitat, all the other species being found in the lower and warmer regions, while according to information received from an authentic source, the Grey-breasted Araçari inhabits the mountains, and is to be found only on the highest wooded portions of the Andes, for which elevated and cold situations the full and downy texture of its plumage, so different from the close feathering of the Araçaries in general, admirably adapts it. The specific name given to this bird relates to the beautiful silvery lustre which prevades the fine grey tints spread over the breast and under surface.

This interesting bird, with many other valuable specimens of Ornithology, was sent to me by my esteemed and valued correspondent D. Christie, Esq., of Popayan, Columbia; and I here gladly avail myself of the opportunity of testifying my sincere acknowledgements for the many favours received, as also for much important information.

As I have never met with this bird in the museums of this country or in those I have visited on the Continent, and Dr. Latham's notice of a "Blue-throated Toucan" being too vague and unsatisfactory to afford any tangible data, I have every reason for concluding this species to have been hitherto undescribed. Of the two specimens received, one is deposited in the Museum of the Zoological Society of London.

Inhabits Columbia.

PTEROGLOSSUS BAILLONI (Wagler)
Saffron coloured Aracari.

PTEROGLOSSUS BAILLONI, *Wagler.*

Saffron-coloured Araçari.

Specific Character.

Pter. rostro mediocri, arcuato; lutescenti, basin versus sub-olivaceo: fronte, genis, gulâ, corporeque subtùs præter femora croceis; corpore suprà, alis, caudâ, femoribusque olivaceo-viridibus aureo parùm tinctis; uropygio coccineo; pedibus tarsisque plumbeis.

Beak moderate, arched, of a greenish yellow, approaching to olive at the base; the front of the head, the cheeks, the throat, and the whole of the under surface, with the exception of the thighs, rich saffron yellow; the upper parts of the body, wings, tail and thighs, olive green slightly shaded with golden yellow; rump scarlet; feet and legs lead colour.

Total length, including the bill, from 14 to 16 inches; *bill*, $2\frac{1}{2}$ to $3\frac{1}{2}$.

Pteroglossus Bailloni. Wagler, Systema Avium.
L' Araçari Baillon. Le Vaill., Ois. de Parad., tom. 2. p. 44. t. 18.
Ramphastos Bailloni. Vieill., Nouv. Dict. d' Hist. Nat., p. 283.
Pteroglossus croccus. Jard. & Selby, Ill. of Ornith., vol. 1. pl. 6.

This richly coloured species was so little known in our collections a few years since, that Sir W. Jardine and Mr. Selby were induced to figure it in their "Illustrations of Ornithology" as a bird new to science, under the name of *Pteroglossus croceus*. The circumstance, however, of its having been previously described and figured in other works, prevents my adopting the very appropriate name given to it by those gentlemen.

The numerous acquisitions we have derived from the Brazils during the last few years have made us more familiar with this bird; and although I am unable to give any particulars as to its habits and manners in a state of nature, I can affirm with certainty that, unlike many of the *Pteroglossi*, the sexes do not offer that difference in the colour of the plumage so characteristic of many species of this genus; in fact no outward difference except in size is observable, the female being a trifle less than the male in all her proportions.

In point of beauty and elegance of form, the Saffron-coloured Araçari is somewhat conspicuous, particularly in the sweeping breadth of rich golden yellow which pervades the breast and all the under parts.

Its habitat appears to be somewhat local, all the examples I have seen being from the Brazils.

PTEROGLOSSUS VIRIDIS.
Green Araçari.

PTEROGLOSSUS VIRIDIS, *Swainson.*

Green Araçari.

Specific Character.

Mas. *Pter. rostro magno; mandibulâ superiore culmine sordidè citrino, subtùs lineâ longitudinali nigrâ à lateribus aurantiaco-flavis discreto; mandibulâ inferiore violaceâ, ad basin roseâ: olivaceo-viridis; subtùs luteus; capite colloque nigris; crisso coccineo.*

Fœm. *Capite colloque castaneis.*

Male. Beak large, culmen regularly arched of a dull lemon yellow, beneath which runs a longitudinal streak of black; the lower portion of the upper mandible orange yellow; the lower mandible violet blue with a roseate base; bare space round the eye, and the legs grass green; the whole of the head and throat deep black; wings, back, and tail olive green; rump scarlet; under surface greenish yellow.

Female. Differs from the male only in having those parts chestnut brown which in the male are black.

Total length, 14 inches; *beak*, $3\frac{1}{2}$; *wing*, $4\frac{1}{2}$; *tail*, 5; *tarsus*, $1\frac{1}{2}$.

Green Toucan. Lath., Syn., 1. 331.

Toucan verd de Cayenne. Tucana Cayanensis viridis. Briss., Ois., 4. 423. pl. 33. fig. 1.

Id., Orn., 2. 162. Pl. Enl. 727. mas., 728. fœm.

Pteroglossus viridis. Swains., Zool. Illust., vol. 3. pl. 169.

The male of this species has been figured by Mr. Swainson in his "Zoological Illustrations," and depending on the usual accuracy with which that gentleman delineates his subjects, I am able to add, from his drawing, the natural colouring of the bill and soft parts which ornament the living bird, but which fades almost immediately after death, rendering the specimens in our cabinets far less vivid and beautiful than when seen in a state of nature.

The natural habitat of *P. viridis* appears to be Demerara and the adjacent northern countries of tropical America. In these parts it is numerously distributed, and is, in fact, one of the commonest species of the genus, there being few collections in Europe without examples of both sexes.

It will be seen that the present species fully illustrates the character which pervades many of the Araçaris, viz. the circumstance of the female having those parts chestnut which in the male are of a glossy black.

The specific term *viridis*, applied to this bird, which possesses so many colours, is somewhat inapplicable. The robust bill, and the peculiar style of colouring which pervades that organ, easily distinguish it from every other species.

Inhabits Demerara, Guiana, &c.

PTEROGLOSSUS HUMBOLDTII; Wagler).
Humboldt's Araçari.

Drawn from Nature & on stone by E. Lear 1832

Printed by C. Hullmandel

PTEROGLOSSUS HUMBOLDTII, *Wagler.*

Humboldt's Araçari.

Specific Character.

Pter. rostro majore; mandibulâ superiore sordidè flavescenti-aurantiacâ, culmine, lineâ basali cingente, maculâque ad singulam serraturam nigris; mandibulâ inferiore nigrâ, ad basin pallidè flavescenti-aurantiaco cinctâ: capite, collo, gulâ, guttureque nigris; dorso sordidè olivaceo; remigibis nigrescenti-brunneis; gastræo pallidè stramineo viridiscente tincto; uropygii maculâ coccineâ; orbitæ tarsique plumbei.

Bill large in proportion to the body; a band of black occupies the culmen from the base to the tip; the remainder of the upper mandible of a dull yellowish orange, with the exception of an indefinite mark of black which springs from each serrature, and a fine line of the same colour surrounding it near the base; lower mandible black, with the exception of the base, which is surrounded with pale yellowish orange; the head, back of the neck, throat, and chest black; all the upper surface, except a spot of scarlet on the rump, of a dull olive; primaries blackish brown; under surface pale straw yellow with a slight tinge of green; thighs chestnut; naked space round the eyes and tarsi lead colour.

Total length, about 16 to 17 inches; *bill*, 4; *wing*, $5\frac{1}{2}$; *tail*, $6\frac{3}{4}$; *tarsi*, $1\frac{3}{8}$.

Pteroglossus Humboldtii, Wagler, Syst. Avium.
——————————— Gould, Proceedings of Zool. Soc., Part III.

A fine and, as far as I am aware, an unique example of this species of *Pteroglossus* forms part of the Cabinet of Natural History of Munich, so renowned from the circumstance of its containing the collections formed in the Brazils by those scientific travellers Drs. Spix and Martius. This fine collection, which is particularly rich in birds pertaining to the present family, was in the most liberal manner thrown open for my investigation, when I hailed with pleasure the appearance of the fine species here figured, exhibiting as it does those peculiar markings of the bill which had heretofore been confined to one known species only, the *Pteroglossus inscriptus*. Its superiority in size and its black under mandible will at all times serve as a distinctive mark between the two species. No information relative to its history and manners appears to have been ascertained, further than that it was a male, and received from the Brazils, in all probability from near the Amazon.

PTEROGLOSSUS INSCRIPTUS; (Swains:)
Lettered Araçari.

E. Lear. del et lith.

Printed by C. Hullmandel.

PTEROGLOSSUS INSCRIPTUS, *Swainson.*

Lettered Araçari.

Specific Character.

Mas. *Pter. rostro flavo, nigro serrato; culmine, apice, fasciâque basali nigris: olivaceo-viridis, subtùs citrinus; capite colloque atris; crisso coccineo.*

Fœm. *Capite colloque brunneis.*

Male. Bill yellow, with a basal band of black and a black culmen and tip; the serrations being also marked by irregular barbs of black; the bare space round the eye and tarsus greenish brown; head and throat glossy black; wings, back, and tail olive green; rump scarlet; under surface lemon yellow.

Female. Resembles the male with the usual difference of brown for black.

Total length, 12 to 13 inches; *beak*, $1\frac{1}{4}$; *wing*, 4; *tail*, 5; *tarsus*, $1\frac{1}{8}$.

Pteroglossus inscriptus. Swains., Zool. Illust., vol. 2. pl. 90. Wagler, Syst. Avium.

For fine examples of this interesting bird I am under obligations to Lord Stanley, to whose liberality I have frequently been indebted for the loan of specimens from his rich and valuable Museum. Independently of the fine pair in this collection, I have seen a female at Edinburgh: these, with the original example in the possession of W. Swainson, Esq., are, as far as I have been able to learn, the only specimens in England. It appears to be a bird of the greatest rarity, and only to be found in the remote and untrodden parts of the country destined by nature for its abode; and which, according to the best information I can collect, is Guiana, the low and swampy districts of which, abounding in luxuriant palms, &c., afford it a retreat, from which there will doubtless be yet obtained many ornithological productions at present unknown.

The Lettered Araçari takes its specific character from the peculiar markings of the mandibles, which in some measure resemble Hebrew characters, and these, with its diminutive size, distinguish it from every other species.

Inhabits Guiana.

PTEROGLOSSUS MACULIROSTRIS; (Cuv et Lichtenst)
Spotted-bill Araçari.

PTEROGLOSSUS MACULIROSTRIS, *Lichtenstein.*

Spotted-bill Araçari.

Specific Character.

Mas. *Pter. rostro abbreviato, cinerascente, in olivaceum ad culmen vergente; mandibulâ superiore ad latera maculis transversis nigris irregulariter fasciatâ: suprà saturatè viridis; corpore infrà, capite, nuchâ, collique lateribus aterrimis, nitidis; genis bimaculatis, maculâ superiore sulphureâ, inferiore aurantiacâ; fasciâ lunatâ cervicali sulphureâ; caudâ olivaceo-viridi, rectricibus sex intermediis rufo apiculatis; tectricibus caudæ inferioribus coccineis; abdomine imo femoribusque croceo, sulphureo, viridique variegatis.*

Fœm. *Corpore infrà, capite, nuchâ, collique lateribus castaneis; macularum genarum superiore sordidè sulphureâ, inferiore obscurè viridi-brunneâ.*

Male. Beak short, pale grey or whitish inclining to olive on the culmen; the sides of the upper mandible irregularly barred with large transverse patches of black; the head, nape, sides of the neck, throat, chest, and middle of the belly, deep shining black; on the cheeks are situated two tufts of feathers; the lower one, which is of a primrose yellow, forms the ear-coverts, and the other, which proceeds from the rictus, is orange; the beak, whole of the upper surface, and wings, deep sap green inclining to olive, divided from the black of the nape by a crescent-shaped band of primrose yellow; tail olive green, the six middle feathers tipped with rufous; the lower part of the abdomen has a mixture of saffron and primrose yellow intermingled with oil green, which prevails especially on the thighs; under tail-coverts scarlet; legs and feet lead colour.

Female. Somewhat less than the male, and differing considerably in plumage, having the head, nape, sides of the neck, throat, and breast, chestnut instead of black; the ear-coverts of a less lively yellow, and the tufts of feathers proceeding from the rictus of an obscure greenish brown.

Total length, 12 inches; *beak*, $2\frac{1}{4}$; *wing*, $4\frac{3}{4}$; *tail*, 5; *tarsus*, $1\frac{3}{8}$.

L'Araçari Koulik du Brésil. Le Vaill., Ois. de Parad., vol. 2. p. 45. t. 15.
———————— Male. Ibid., Suppl., p. 41. fig. A A.
Pteroglossus maculatus. Jard. & Selby, Illus. of Ornith., vol. 1. pl. 26.
L'Araçari à bec tacheté; Ramphastos maculatus. Vieill., Gal. des Ois., tom. 2.

The Spotted-bill Araçari may be readily distinguished from all other known species by the abbreviated form of its beak, and the distinct but irregular spots of black on the upper mandible, whence is derived its specific name *maculirostris*. As the object in employing any distinguishing term should be to point out most readily some prominent specific character, I have been induced to adopt the name given to this species by M. Lichtenstein, prior to the one (*maculatus*) assigned to it by Vieillot.

Unlike the true Toucans, the sexes of many species of the *Pteroglossi* will be observed to present considerable difference in the colour of the plumage,—a fact which is forcibly illustrated in the present bird; the female possessing a rich chestnut-coloured head and breast, while the same parts in the male are deep shining black: this, however, is not characteristic of the whole genus, nor is it to be observed in any other species in so remarkable a degree.

The scarcity of information which had been obtained respecting this species, until within these few years, has been the cause of considerable confusion as regards the identity of the sexes. Among other instances we may notice Dr. Latham, who, in his laborious work, "The General History of Birds," has described and figured the female as a distinct species under the name of "Janeiro Toucan": moreover, he appears to have a doubt whether it may not be the female of the *piperivorous* species,—a bird differing in many of its characters.

The *P. maculirostris* is supposed to be strictly confined to the Brazils, as it is from thence alone that it has been received. It is to be regretted that no information can be added respecting its natural habits; in all probability they differ in minor details from those of the *Pteroglossi* of the same size, but which have beaks more enlarged in dimensions, though less powerful, than the short, thick, and strong bill of the present species.

Inhabits the Brazils.

PTEROGLOSSUS NATTERERI.

Natterer's Araçari

Drawn from Nature & on stone by J & E. Gould.

PTEROGLOSSUS NATTERERII.

Natterer's Araçari.

Specific Character.

Mas. *Pter. rostro rubro, ad apicem flavescenti-albido, lineâ culminali, maculâ ad latera utriusque mandibulæ, maculâque suprà singulari serraturam nigris, serraturis albis: capite suprà, gulâ, guttureque nigris; fasciâ nuchali pallidè flavâ; dorso aliisque saturatè olivaceis; rectricum sex intermediarum apicibus castaneis; lateribus flavis, in castaneum ad femora transeuntibus; caudæ tectricibus inferioribus coccineis.*

Fœm. *Capite suprà, gulâ, guttureque pallidè castaneis; regione paroticâ pallidè flavescenti-viridi; dorso pallidiore.*

Male. Bill red, with the exception of a line of black on the culmen, a spot on the side of each mandible, and a small irregular mark of the same colour above each of the serratures, which are white; the point yellowish white; top of the head, occiput, throat, and breast black; ear-coverts pale yellow; a lunar-shaped band of the same colour separates the black of the occiput from the back, which, with the wings, is of a dark olive; tips of the six middle tail-feathers chestnut; flanks yellow, passing into chestnut on the thighs; under tail-coverts scarlet.

Female. All those parts light chestnut which in the male are black; the green on the back less deep, and the ear-coverts pale yellowish green; in other respects the colouring is the same.

Total length, 13½ inches; *bill*, 2⅝; *wings*, 5½; *tail*, 5; *tarsi*, 1½.

Pteroglossus Nattererii, Gould, Proceedings of Zool. Soc., Part III.

Although I have at all times endeavoured to avoid the imposing of a specific title on a new species which did not convey some idea connected with its form or colouring, I have been induced to deviate from this rule in the present instance from the earnest desire I feel to pay a just tribute of respect to a most enthusiastic and able naturalist, through whose personal exertions in the Brazilian forests for the period of eighteen years so vast a collection has been transmitted to the capital of that country by the munificence of whose Government he was enabled to prosecute his researches; and I would here beg to offer my acknowledgements to M. Schreibers, the highly talented director of the Imperial Museum of Vienna, for the liberal manner in which he permitted me to examine the birds of this group contained in the collection under his care, and to add to my monograph a representation of this rare species.

I am not aware of the precise locality in which this fine bird was obtained, but from the circumstance of its having accompanied other specimens from that part of Brazil which borders the river Amazon, it may reasonably be believed to be a native of the woods of those districts.

In point of affinity it is closely allied to the *Pteroglossus maculatus*, and with that bird and several others it will form a separate and well-defined group, possessing many peculiar characters.

PTEROGLOSSUS REINWARDTII :(Wagler)
Reinwardt's Araçari.

Drawn from Nature & on stone by J & E Gould

Printed by C Hullmandel

PTEROGLOSSUS REINWARDTII, *Wagler.*

Reinwardt's Araçari.

Specific Character.

Pter. rostri dimidio basali sordidè rufescenti-aurantiaco, culmine apiceque nigrescenti-brunneis: capite, collo, gulâ, guttureque nigris; regione paroticâ fasciâque nucham cingente auruntiacis, hâc pallidiore; dorso saturatè olivaceo-viridi brunneo tincto; lateribus aurantiacis castaneo tinctis; caudæ tectricibus inferioribus coccineis; remigibus nigrescenti-brunneis; rectricibus quatuor intermediis castaneo spiculatis; orbitæ pedesque viridescenti-plumbei.

Bill dull reddish orange for the basal half of its length, the culmen and tip blackish brown; head, neck, throat, and chest black; ear-coverts bright orange; a semilunar band surrounds the nape of the same colour, but somewhat lighter; whole of the remaining parts of the upper surface dark olive green tinged with brown; quills blackish brown; four middle tail-feathers slightly tipped with chestnut brown; flanks deep orange, tinged with chestnut; thighs light brown; under tail-coverts crimson; feet and naked skin round the eyes greenish lead colour.

Total length, 12 to 13 inches; *bill*, $2\frac{1}{2}$; *wings*, 5; *tail*, $5\frac{3}{4}$; *tarsi*, $1\frac{1}{4}$.

Pteroglossus Reinwardtii, Wagler, Syst. Avium.
———————— Gould, Proceedings of Zool. Soc., Part III.

The individual from which the accompanying figure was taken is in the Royal Museum at Munich, and is, I believe, the only specimen in the collections of Europe.

I candidly own that before I had the opportunity of inspecting it I entertained some doubts as to its real specific value, the description given by Wagler having induced me to suspect it might be only a variety or an immature specimen of *Pter. Kulik*; it will be evident, however, on comparing the present Plate with that of *Pter. Kulik* that my suspicions were unfounded, the bird under consideration having marks which will at once prove it to be a distinct species. At present nothing further can be said respecting its history than that it is a native of Brazil, a country constantly calling forth our admiration by the frequent receipt of new and beautiful productions.

I have coloured the bill as it appeared in the specimen from which the drawing was taken, yet there is every reason to suppose that this organ was of a much brighter hue.

It appears to be more nearly allied to *Pter. Nattereri* than to any other; yet, upon comparing the two, it will be found to present good distinguishing characteristics, the bill being different in its form and markings, and the ear-coverts being entirely orange, while in several specimens of *Pter. Nattereri* which I had the opportunity of examining, the same parts were pale lemon yellow, with a slight tinge of brown at the lower extremity; the semilunar mark on the back and the flanks also differ considerably. In the present species the four middle tail-feathers are tipped with brown, while in *Pter. Nattereri* six have this mark.

PTEROGLOSSUS CULIK, (Wagler)

Koulik Araçari.

Drawn from Nature & on Stone by J. E. Gould.

Printed by C. Hullmandel

PTEROGLOSSUS CULIK, *Wagler.*

Koulik Araçari.

Specific Character.

Mas. *Pter. rostro nigro, basin versus in rubrum transeunte: olivaceo-viridis, ventre castaneo variegato; capite, collo, pectoreque nigris; auribus lunulâque dorsali flavis; caudæ tectricibus inferioribus coccineis; rectricibus ad apices castaneis.*

Fœm. *Lunulâ dorsali nullâ; cervice sordidè castaneâ; jugulo pectoreque obscurè cœruleo-canis.*

Male. Beak black, gradually passing off into red at the base; naked space round the eye and the tarsus dark lead colour; top of the head, occiput, throat, and breast black; ear-coverts and a crescent-shaped band on the top of the back yellow; lower part of the belly olive green mixed with chestnut; under tail-coverts scarlet; the whole of the upper surface olive green, the tail-feathers being tipped with chestnut.

Female. Resembles the male in her general plumage, but wants the yellow semilunar band on the top of the back; has the back of the neck dull chestnut; and the throat and breast obscure lavender grey.

Total length, 12 to 13 inches; *bill*, $2\frac{3}{4}$; *wing*, $4\frac{1}{2}$; *tail*, $4\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$.

Green Toucan. Edw., vol. 3. pl. 330.
Toucan à collier de Caj. Buff., Pl. Enl. n. 577.
Ramphastos piperivorus. Auct.
L'Araçari Koulik de la Guyane. Levaill., Ois. de Parad., vol. 2. p. 41. pl. 13.
Pteroglossus Culik. Wagler, Syst. Avium.
———— *Reinwardtii?* Ibid.
———— *Langsdorffii?* Ibid.

The rich countries of Cayenne and Guiana are the native habitats of this interesting and elegant species of Araçari, where, I am informed, it has obtained the name of Koulik, from the peculiarity of its cry. It appears to be somewhat local in its distribution, as I have never received it either from Brazil or the Spanish Main. It is a species easily distinguished from every other by a slight attention to the detail of its colouring, the male being remarkable for his black breast and the semilunar band between the shoulders, and the female for the chaste colouring of her breast and under parts.

Inhabits Cayenne and Guiana.

PTEROGLOSSUS LANGSDORFII (Wagler)
Langsdorfs Araçari

Drawn from Nature & on stone by J & E Gould

PTEROGLOSSUS LANGSDORFFII, *Wagler.*

Langsdorff's Araçari.

Specific Character.

Pter. rostro nigrescenti-brunneo, prope basin in cinereo-olivaceum transeunte, serraturis albidis: vertice, collo, gulâ, guttureque nigris; regione paroticâ fasciâque nuchali aurantiaco-flavis; dorso, alis, rectricumque basi saturatè olivaceo-viridibus brunneo tinctis, harum apicibus; lateribus olivaceis castaneo tinctis; tectricibus caudæ inferioribus sordidè coccineis; pedes plumbei.

Bill blackish brown for three parts of its length from the tip, fading into dark greyish olive at the base, more extended over the under mandible; serratures whitish; top of the head, back of the neck, throat, and breast black; ear-coverts and nuchal band rich orange yellow; whole of the upper surface, wings, and upper portion of the tail-feathers dark greenish olive tinged with brown; flanks rich olive tinged with chestnut brown; thighs uniform brown; under tail-coverts dull crimson; legs and feet lead colour.

Total length, about 13½ inches; *bill*, 2¾; *wing*, 5¾; *tarsi*, 1½.

Pteroglossus Langsdorffii, Wagler, Syst. Avium.

———————— Gould, Proceedings of Zool. Soc. Part III.

The robust form and nearly uniform colouring of the bill are perhaps the most prominent features by which this species may be distinguished from several others, which possess alike the lunated collar and richly coloured ear-coverts.

A single example of this bird, to all appearance fully adult, forms a part of the Munich collection, and is, I believe, the individual from which the late Dr. Wagler took the description in the monograph of this family, published in his small but useful work the "Systema Avium." I regret to add that I found the tail of this specimen so much mutilated as to render it unsafe to figure more of this organ than is represented in the Plate.

In size the present bird is somewhat larger than the *Pter. maculirostris*; its ear-coverts, nuchal band, and flanks are also much brighter in colour than the corresponding parts in that species.

The only information I could obtain respecting this rare species was that it is a native of Brazil, from which country it was received many years since.

PTEROGLOSSUS PRASINUS; (Lichtenst.).
Golden-green Araçari.

E. Lear del. et lith.

Printed by C. Hullmandel

PTEROGLOSSUS PRASINUS, *Lichtenstein.*

Golden-green Araçari.

Specific Character.

Pter. mandibulâ superiore flavâ, culminis strigâ, maculâ ante nares, lineâque ad tomium nigris; inferiore nigrâ, fasciâ basali flavâ: suprà aureo-viridis, in cœruleum ad remiges et ad rectrices extrorsum transiens, harum apicibus rufo-brunneis; genis gulâque cinereis; pectore cœrulescenti-viridi, in viridem posticè transeunte; tectricibus caudæ inferioribus rufis.

Juvenis. *Mandibulâ superiore ad basin rufo nebulosâ versus apicem in flavum et lutescentem vergente; inferiore totâ nigrâ: abdomine quàm in adulto obscuriore.*

Upper mandible yellow with a black line along the culmen, a black spot before the nostrils, and a dash of the same colour along the edge; under mandible black with a basal border of yellow; upper surface golden green, passing into blue on the quills and lower half of the tail-feathers, which are tipped with rufous brown; naked skin round the eyes dull blueish green; cheeks and throat grey; breast blueish green, passing into green beneath; lower tail-coverts rufous; tarsi lead colour.

In the immature bird the abdomen is the same though less bright; but the upper mandible is clouded at its base with reddish, passing insensibly into yellow and greenish at the point; under mandible black.

Total length, 13 inches; *bill*, 3.

The naturalist has often to observe, that Nature never proceeds abruptly in the formation of her groups, but prepares a passage from one to another by a series of intervening gradations, embodying, though in a minor degree, the distinguishing characteristics of the two sections to which they form the connecting link: such is the case with the species before us. In my description of the *Pteroglossus sulcatus*, I hinted that at a future day it would in all probability constitute the type of a new genus; this division would be characterized by an attenuated and channelled bill, together with a more subdued and uniform style of colouring, and a short, graduated tail. To this form the Golden-green Araçari appears, at the first glance, to be related, and might with propriety be placed there in a strictly systematic arrangement; a more attentive examination, however, indicates its relationship, in an equal degree, to the more genuine *Pteroglossi*. The bill, for instance, though channelled, is only slightly so, and approaches that of the Araçaries in breadth and general dimensions; and the tips of the tail-feathers and under tail-coverts, as in most of that genus, are rufous brown.

The *Pteroglossus prasinus* is exceedingly rare; indeed, I know but of one museum in Europe possessing specimens, namely, that of Berlin; and I am indebted to the kindness and liberality of Professor Lichtenstein, who first made it known to science, for permission to examine and make drawings of the unique examples under his immediate care,—a favour for which, among many others, I beg to express my warmest thanks, and at the same time acknowledge my obligations.

Of the habits and œconomy of the Golden-green Araçari, as distinguished in the minuter details from those of its race, I have no information to communicate; there is, however, one fact, as the Plate will show, sufficiently illustrated, namely, the change which the beak undergoes, not only in size, but also in colouring, during the progress of the bird from youth to maturity,—a change not peculiar to this species alone, but characteristic of the whole family; and I may add, that it is from a want of sufficient attention to this circumstance, that many mistakes and much confusion have arisen. As regards the development of the beak, I may observe, that it is much more gradual than that of the rest of the body; for when the latter has acquired its complete dimensions, the former is little more than a third of the size it is afterwards to attain.

Inhabits Mexico.

PTEROGLOSSUS PAVONINUS; (Wagler).
Peacock Groove-bill Araçari.

Drawn from Nature & on stone by J. & F. Gould

Printed by C. Hullmandel.

PTEROGLOSSUS PAVONINUS.

Peacock Groove-bill Araçari.

Specific Character.

Pter. rostro nigro, ad basin lineâ aurantiaco-flavâ circundato, lateribus (nisi basin versus) flavis supernè in cœruleo-viridem transeuntibus infrà lineâ nigrâ a tomio sejunctis: prasinus, subtùs pallidior tectricibus caudæ inferioribus rectricumque apicibus brunneis; remigibus nigrescenti-brunneis; orbitæ rubræ: pedes plumbei.

Bill black, with the exception of two thirds of the upper mandible (measuring from the point), which has the central portion of the sides fine yellow, on the upper fading into rich blue green, on the lower, which is separated from the dentition line by a narrow stripe of black, the base of both mandibles surrounded by a line of orange yellow; the whole of the upper and under surface, with the exception of the under tail-coverts and the tip of the tail-feathers which are brown, is of a rich grass green, paler on the throat and under surface; quills blackish brown; bare skin round the eye red; feet lead colour.

Total length, 13 to 14 inches; *bill,* nearly $3\frac{1}{2}$; *wing,* $5\frac{1}{4}$; *tail,* $5\frac{1}{2}$; *tarsi,* $1\frac{3}{8}$.

Pteroglossus pavoninus, Label in Royal Museum, Munich. Gould, Proceedings of Zool. Soc., Part III.

This species is even more diminutive in each of its relative parts than *Pter. Prasinus*, which, as well as the present bird, is a native of Mexico. Independently of its less size, it may be distinguished from its near ally by the peculiar form and marking of the bill, the basal portion of which is entirely surrounded by black; and a beautiful green and yellow colour is spread over the sides of the upper mandible. No other specimen than the one contained in the collection at Munich has come under my notice; a label bearing the name of *Pter. pavoninus* was attached to this example; and it would appear to have been a recent acquisition, from the circumstance of its not being noticed in the valuable Monograph of Dr. Wagler, who met an untimely death about two years since while on a shooting excursion near Munich; in passing through a hedge with a loaded gun, the muzzle of which was directed towards his body, it unfortunately exploded, and we regret to add caused a speedy termination to the worldly cares of a man whose numerous works and great abilities had rendered him one of the most scientific naturalists of the age.

PTEROGLOSSUS SULCATUS; (Swains)
Grooved-bill Araçari.

Drawn from a Bird in the Museum of Science by J. & E. Gould

Printed by C. Hullmandel

PTEROGLOSSUS SULCATUS, *Swainson.*

Grooved-bill Araçari.

Specific Character.

Pter. rostro attenuato; mandibulis compressis, sulcatis, superioris sulcis utrinque duobus, inferioris unico; superiore nigrâ, culmine apiceque saturatè rufo-brunneis; inferiore nigrâ, ad basin sanguineâ: viridis, subtùs pallidior; jugulo cinerascente; genis cæruleis.

Beak attenuated, curved, and ending in a sharp point at the tip; mandibles compressed, the upper having two deep channels and the lower a single one on each side; base of the lower mandible blood red; the culmen and tip deep rufous brown, the remaining portion black. Feathers covering the cheeks cœrulean blue. The whole of the upper surface green, as is the under also, but somewhat lighter, and inclining to grey under the throat.

Total length, from 11 to 13 inches; *bill*, 3 to $3\frac{1}{4}$; *tarsus*, $1\frac{1}{8}$.

Pteroglossus sulcatus. Swains., in Journ. of Roy. Inst., vol. 9. p. 267. and in Zool. Illus., vol. 1. pl. 44. Temm., Pl. Col., pl. 356.

This interesting species of *Pteroglossus* was first introduced to science by Mr. Swainson, who informs us it was received by him from the Spanish Main. Subsequently to the description which appeared in the "Journal of the Royal Institution," and the accurate figure given by Mr. Swainson in his "Zoological Illustrations," a second Plate of this bird has been published by M. Temminck in his "*Planches Coloriées.*" Although many years have elapsed since the introduction of this bird, I am still unable to add any information to that already furnished by those able naturalists, its extreme rarity having hitherto precluded all possibility of ascertaining any particulars respecting its natural habits and manners.

The great difference which the *Pteroglossus sulcatus* presents in the formation of its bill, together with some other characters, lead me to suspect that it will hereafter be found to constitute the type of a separate group, allied, in many important points, to the Barbets (*Bucco*): I am, however, restrained at present from instituting a new genus for its reception by the consideration that little information is as yet obtained respecting its habits, manners and general œconomy.

The two birds from which the figures were taken, and which are at present in the Museum of the Zoological Society of London, are considered to be male and female: should this ultimately prove to be the case, the sexes will offer no external difference except in size, the female being somewhat the least.

Inhabits the Spanish Main and Guiana.

PTEROGLOSSUS DERBIANUS.

Derby's Groove-bill Araçari.

PTEROGLOSSUS DERBIANUS.

The Earl of Derby's Araçari.

Specific Character.

Pter. rostro castaneo, anticè in brunnescenti-nigrum transeunte, ad basin fasciâ angustâ flavescenti-albidâ cincto: viridis, suprà brunneo parum tinctus; capite cœrulescenti-viridi; remigibus nigrescenti-brunneis; rectricum intermediarum duarum apicibus castaneis; orbitæ rufo-brunneæ; tarsi cœruleo-plumbei.

Bill rich chestnut, passing into deep brownish black on the middle of the upper and the anterior portion of the lower mandibles, the sides of the base of both having a narrow band of yellowish white; the upper surface of the body green, with a slight tinge of brown; all the remaining plumage green, with the exception of the back of the head and neck, which are strongly tinged with blue, the primaries, which are blackish brown, and the tips of the two middle tail-feathers, which are chestnut; space round the eyes reddish brown; tarsi blueish lead colour.

Total length, 14½ to 15 inches; *bill*, 3⅜; *wings*, 5; *tail*, 5; *tarsi*, 1½.

Aulacirhynchus Derbianus. Gould, Proceedings of Zool. Soc., Part III. p. 49.

For the loan of the only example of this fine species which has come under my notice I am indebted to the kindness of the Earl of Derby, whose valuable collection has so often afforded me the opportunity of examining rare and new species. In naming this new bird after so distinguished and honourable an individual, I am influenced partly by the interest which His Lordship takes in the promulgation of science, especially ornithology, and partly by the desire I feel to testify my respect and gratitude.

As far as I have been able to ascertain, this species is an inhabitant of the Cordillerian Andes, from which country it came, although by an indirect channel, into the possession of Lord Derby, who kindly forwarded it to me for the purpose of its being figured and described.

It differs from *Pteroglossus sulcatus* (the only known species with which it is likely to be confounded) in being more robust in size, and in having a more powerful and less attenuated bill, the basal angle of which is not carried near so far back as in *Pter. sulcatus*: the brown tips of the middle tail-feathers of the present species, a character never seen in *P. sulcatus*, will also serve at all times to distinguish them.

PLATYRHYNCHUS LEMANOTUS.
Wood impel Grove lith Aragua

PTEROGLOSSUS HÆMATOPYGUS.

Blood-rumped Groove-bill Araçari.

Specific Character.

Pter. rostro saturatè castaneo : vertice, collo, dorsoque viridibus subolivaceis ; subtùs cærulescenti-viridis, pectore saturatiore ; uropygio coccineo ; rectricibus quatuor intermediis brunneo apiculatis ; orbitæ rubræ ; pedes olivaceo-brunnei.

Bill of a deep dark chestnut; crown of the head and upper surface green inclining to olive; rump blood-red; the upper tail-coverts and tail green, the four middle feathers of the latter tipped with brown; whole of the under surface bluish green, which is more intense on the breast; naked skin round the eyes red; legs olive brown.

Total length, 14 inches; *bill* $2\frac{3}{4}$; *wing*, $4\frac{3}{4}$; *tail*, $5\frac{1}{4}$; *tarsi*, $1\frac{1}{2}$.

Pteroglossus hæmatopygus, Gould, Proceedings of Zool. Soc. Part II. p. 147.

This new species will be readily distinguished from all known grooved-billed Araçaris by the white bands on the bill and the blood-red spot on the rump. Its nearest allies are *Pter. sulcatus* and *Pter. Derbianus*; but independently of the blood-red spot on the rump already alluded to, it may always be distinguished from those species by its shorter bill, wider gape, and by the circumstance of the four middle tail-feathers being tipped with brown, while in *Pter. Derbianus* the two middle tail-feathers only are thus tipped.

I cannot close this paper without offering my warmest thanks to N. C. Strickland, Esq., for his kindness in lending me the present species to figure from, and who has at all times rendered me every assistance in his power by placing at my disposal for scientific investigation any species contained in his collection. The one in his possession, and another in the Royal Museum at Leyden, are, as far as I am aware, the only examples of this species at present known. I have to regret that Mr. Strickland could give me no information as to what part of South America his specimen was received from, but circumstances induce me to believe that it is from the Cordillerian Andes.

OBSERVATIONS

ON

THE ANATOMY OF THE TOUCAN.

THE organs of digestion in the Toucan present a general simplicity of structure, which accords with its geographical position and power of assimilating both animal and vegetable food, so abundantly provided by Nature in a tropical climate. The amplitude of the œsophagus and general width of the intestinal canal correspond to the magnitude of the beak. There is no lateral dilatation or crop, nor is the gizzard so encroached upon by its muscular parietes as to render such a reservoir for the alimentary substances necessary. The intestinal canal is equally devoid of lateral pouches, or *cæca*: the gastric glands are of a simple form, and are disposed, for the extent of an inch, around the termination of the œsophagus. The communication of the gizzard with the *proventriculus* is free, and readily permits regurgitation to take place. This act has been observed in two living species of Toucan (*Ramphastos Erythrorhynchus* and *Ramph. Ariel*, Vigors); and as the substances so regurgitated were, after undergoing a second mastication, again swallowed, it may be compared to the rumination of herbivorous quadrupeds.

The intestinal canal does not exceed the length of the body, including the bill. The general structure of the digestive apparatus of the Hornbill agrees with that of the Toucan.

The liver of the Toucan is composed of two lobes, of unequal size, joined by a small band, the margins of the lobes being more rounded than usual. There is no gall-bladder, and in this deficiency the Toucan manifests an affinity to the *Picidæ* and *Psittacidæ*, among the *Scansores*; while the Hornbill, on the contrary, resembles the *Corvidæ* in the large development of its biliary receptacle. A small hepatic duct enters the duodenum near its commencement; and a second duct, about two lines in diameter, passes to a more distant part of the intestine, where it terminates close to the insertion of the two pancreatic ducts.

The kidneys are composed of three lobes, of which the middle one is the smallest; their length is $1\frac{1}{2}$ inch; their surface is convoluted, though in a less marked degree than in reptiles. Between the anterior extremities of these glands, in a female specimen of *Ramphastos Ariel*, was situated the ovary, of a triangular shape, and apparently healthy in structure. The *ova* were like minute granules, and disposed in a convoluted manner. The supra-renal glands were imbedded in the posterior part of the ovary. The oviduct was as large as a crow-quill; it commenced by the usual fimbriated and wide aperture, was slightly tortuous at the commencement, and then continued straight to the *cloaca*.

Among the varied forms of tongue which birds present, that of the Toucan is one of the most remarkable. Its length from the aperture of the *glottis*, in a full-grown *Ramphastos Toco*, was six inches. The posterior ridge, or backward-projecting process, was broad and finely notched; it was situated about 4 lines from the *glottis*. Anterior to this process the tongue is soft and minutely papillose for the extent of 4 lines, and here, most probably, the sense of taste resides: the rest of the organ consists of a transparent horny *lamina*,

flattened horizontally and supported by the anterior process of the *os hyoides*, which forms a ridge along the middle of its inferior surface. At about four inches from the extremity of the horny *lamina* the margins become obliquely notched, and these notches, becoming deeper and closer together towards the extremity, occasion the bristled appearance on each side of the tongue. These bristles, Mr. Vigors observes, were generally applied to the morsels of food whilst held between the mandibles previously to being swallowed.

The *cornua* of the *os hyoides* are $1\frac{1}{2}$ inch in length. The *trachea* is narrow, and simple in its structure, the rings somewhat flattened and decreasing in diameter towards the inferior extremity, from which a single pair of muscles pass off to the *sternum*. The length of the lower fourth of the tube, and the state of tension in the *bronchia*, are regulated by a pair of small muscles, which, arising from the sides of the tracheal cartilages, are inserted into the bone of divarication at the extremity of the *trachea*: and that this part of the tube is subjected to variations in length is indicated by the tortuous character of the recurrent nerves attached to the sides of the *trachea* at this part. The lungs are small in proportion to the size of the bird, but of the usual form and structure. The abdominal air-cells are of small size. The heart is of a more oblong form than in general; its *apex*, as it were, truncate; its length 1 inch.

The pectoral muscles, as in the *Psittacidæ*, are but feebly developed, and the keel of the *sternum* is of moderate size, not projecting more than half an inch from the plane of the bone. The *sternum* has four notches at its posterior margin. The clavicles, or lateral halves of the *furcula*, are here, as in the *Psittacidæ* and *Struthionidæ*, separate; they are 1 inch in length, slender, pointed at their lower ends, and joined to each other and to the *sternum* by ligament only.

The peculiar motions of the tail called for a particular examination of that part. It is difficult to state the precise number of the caudal *vertebræ* in consequence of the terminal ones being anchylosed, requiring for this purpose the examination of a young specimen at a period before the *anchylosis* takes place. In the skeleton of a Black-billed Toucan which I have examined, it would appear that three *vertebræ* are thus anchylosed, making the entire number of coccygeal *vertebræ* nine. The Woodpecker has also nine caudal *vertebræ*, and this seems to be the greatest number found in birds. The first six of these *vertebræ* in the Toucan are articulated by ball-and-socket joints, the ball and the socket being most distinct in the last two joints. That between the sixth and the anchylosed *vertebræ* is provided with a capsule and synovial fluid; the others have a yielding ligamentous mode of connexion. The spinous processes of these *vertebræ*, both superior and inferior, are of moderate size, but smallest in the sixth, where the greatest degree of motion takes place. The transverse processes, on the contrary, are large and broad, so as almost wholly to prevent lateral motion. The first of the anchylosed *vertebræ* is broad and flat and of a rounded form, supporting the two coccygeal glands: the last of these processes is compressed laterally, and of the ordinary ploughshare form. The caudal *vertebræ* can be inflected dorsad till their superior spines are brought into contact with the *sacrum*; in the opposite direction they can scarcely be bent beyond a straight line: and it is to this structure of the bones and joints that is to be attributed the capability in the Toucan of turning its tail upon its back (as represented in the Zoological Journal, vol. ii. pl. xv.), the muscles presenting comparatively few peculiarities, since the motion alluded to is remarkable rather for its extent than the vigour with which it is performed.

The principal *elevators* of the tail are the *sacro-coccygei superiores* (*sacro-sus-caudiens* of Vicq d'Azyr). They arise from two longitudinal ridges on the inferior and convex part of the *sacrum*, and are inserted into the superior spines of the first six *vertebræ* by detached tendons, terminating broadly in the anchylosed *vertebræ*. The principal antagonists of these muscles, *sacro-coccygei inferiores* (*sacro-sous-caudiens* of Vicq d'Azyr), pass over the first five *vertebræ* and terminate in the sixth and anchylosed *vertebræ*: their origins are wider apart than in the preceding pair of muscles, coming off from the margins of the sacro-sciatic notches. In the interval are situated small muscles passing from the transverse processes to the inferior spines of the first six *vertebræ*.

From the limited nature of the lateral motions of the tail the muscles appropriate to these movements are feeble, especially in comparison with those which are observed in the birds that spread their tail-feathers

in flight, in order to regulate their course during that vigorous species of locomotion. These muscles are in number two on each side, arising from the posterior extremities of the *ischia*, and inserted into the expanded anchylosed *vertebræ*. From the disposition of these muscles it is obvious that after the proper *elevators* have raised the tail to a certain height, they also become dorsad of the centre of motion, combine their forces with the *elevators*, and by this addition of power terminate the act of throwing up the tail by a jerk: Mr. Vigors in his observations on the living animal observes, that "in these movements the tail seemed to turn as if on a hinge that was operated on by a spring."

The osseous portions of the mandibles of the Toucan are disposed in a manner adapted to combine with the great bulk of those parts a due degree of strength and remarkable lightness, and the bony structure is consequently of a most beautiful and delicate kind. The external parietes are extremely thin, especially in the upper beak: they are elastic, and yield in a slight degree to moderate pressure, but present considerable resistance if a force is applied for the purpose of crushing the beak. At the points of the mandibles, the outer walls are nearly a line in thickness; at other parts, in the upper beak, they are much thinner, varying from 1-30th to 1-50th part of an inch, and in the lower beak are from 1-20th to 1-30th of an inch in thickness.

On making a longitudinal section of the upper mandible, its base is seen to include a conical cavity, about two inches in length and one inch in diameter, with the apex directed forwards. The walls of this cone consist of a most beautiful osseous network, intercepting irregular angular spaces, varying in diameter from half a line to two lines. From the parietes of this cone, a network of bony fibres is continued to the outer parietes of the mandible, the fibres which immediately support the latter being almost invariably implanted at right angles to the part in which they are inserted.

The whole of the mandible anterior to the cone is occupied with a similar network, the meshes of which are largest in the centre of the beak in consequence of the union which takes place between different small fibres as they pass from the circumference inwards. It is remarkable that the principle of the cylinder is introduced into this elaborate structure: the smallest of the supporting pillars of the mandibles are seen to be hollow or tubular, when examined with the microscope. The structure is the same in the lower mandible, but the fibres composing the network are in general stronger than those of the upper mandible.

The medullary membrane lining these cavities appears to have but a small degree of vascularity. Processes of the membrane, accompanying vessels and nerves, decussate the conical cavity at the base of the beak. The principal nerves are two branches of the fifth pair, which enter at the lower part of the conical cavity, and diverge and ascend as they pass forwards to the end of the bill, giving off branches, which are distributed to the horny covering, and supply it with sensibility.

The air is admitted to the interior of the upper mandible from a cavity situated anterior to the orbit, which communicates at its posterior part with the air-cell continued into the orbit, and at its anterior part with the maxillary cavity. The nasal cavity is closed at every part, except at its external and internal apertures, by the pituitary membrane, and has no communication with the interior of the mandible.

The organ of smell is confined to the base of the upper jaw. The canal, which is traversed by the air and odorous particles in inspiration, forms a sigmoid curve in the vertical direction. The external orifice is on precisely the same perpendicular line as the internal one. It is situated at the posterior surface of the upper mandible, where it is raised above the level of the cranium; the orifice is consequently directed backwards, secure from all injury that might happen to it in the act of penetrating dense or interwoven foliage.

The olfactory canal is at first of almost a cylindrical form, and about two lines in diameter. It passes forwards for about half an inch, receiving from the mesial aspect the projection of the first spongy bone; it then bends downwards and backwards, and is dilated to admit the projections of the two other spongy bones: from this point it descends vertically to the palate, at first contracted, and afterwards dilating to form the internal or posterior orifice. The first or outermost spongy bone is almost horizontal, and has its convexity

directed outwards. The second is nearly vertically placed, with its convexity directed backwards: it terminates in a narrow point below. The third or superior spongy bone makes a small projection towards the mesial plane, about the size of a pea. These spongy bones are formed by inward projections of the inner and posterior osseous parietes of the nasal passage; they are cellular, and air is continued into them from the cranial diploë; but the parietes of the nasal passage are entire and smooth, and lined by a delicate pituitary membrane. The inner table of the skull is continuous with the parietes of the nasal cavity, by means of the bony canal which accompanies and protects the olfactory nerves, and which represents, as it were, a single foramen of the cribriform plate of the mammalia. The communication of the cavity of the cranium with that of the nose is thus similarly formed, and is only obstructed in the recent state by the pituitary membrane, on the posterior *cul de sac* of which the olfactory nerve distributes its branches in a radiated manner. These branches were confined, as Scarpa has observed in other birds, to the pituitary membrane covering the septum narium and the superior spongy bone.

The external orifice of the meatus auditorius is situated about half an inch behind the lower boundary of the orbit. The membrana tympani closes it so obliquely that its plane is directed almost backwards; its anterior edge is consequently about three lines from the external orifice, while its posterior margin is at least six lines from the same point. It is convex outwardly as in birds generally. The apparatus of the internal ear is easily exposed, the semicircular canals being lodged in a delicate reticulation of the diploë of the cranium. These parts, with the ossiculum of communication and the cochlea, do not present any deviations from the ordinary structure worthy of notice.—R. O.

DESCRIPTION OF THE PLATE.

Fig. 1. Section of the cranium and upper mandible of the *Ramphastos Toco*.

a. The cancellated structure of the beak.
b. The cavity at the base.
c. Branches of the fifth pair of nerves.
d d. The external orifices of the nostrils.
e. The osseous parietes of the nasal passages.
f. The osseous tubes protecting the olfactory nerves.
g. The pituitary membrane exposed, and branches of the olfactory nerve radiating upon it.
h. The superior semicircular canals of the internal ear.
i i. Hemispheres of the cerebrum.
k. Cerebellum.

Fig. 2. The upper surface of the tongue.

l. The fringed or feathered portion of the tongue.
m. The orifice of the larynx.
n. The orifice of the pharynx.
o o. Cornua of the os hyoides (*cerato-hyal* bones of Geoffroy).
p. The trachea, or windpipe.
q. The gullet.

Fig. 3. Vertical longitudinal section of the head.

The same letters indicate the same parts as in the previous figures.

d. Shows the internal aperture of the nostrils.
r. The beginning of the spinal chord.
s. The articulating surface of the occipital bone.
t. The nasal septum or partition.
u. The air-cell anterior to the orbit from which the air passes into the mandible.
v. The cancellated structure of the lower jaw.

Fig. 4. Side view of the foot of *Ramphastos Toco*.

Fig. 5. Under surface of the same.

Fig 1.

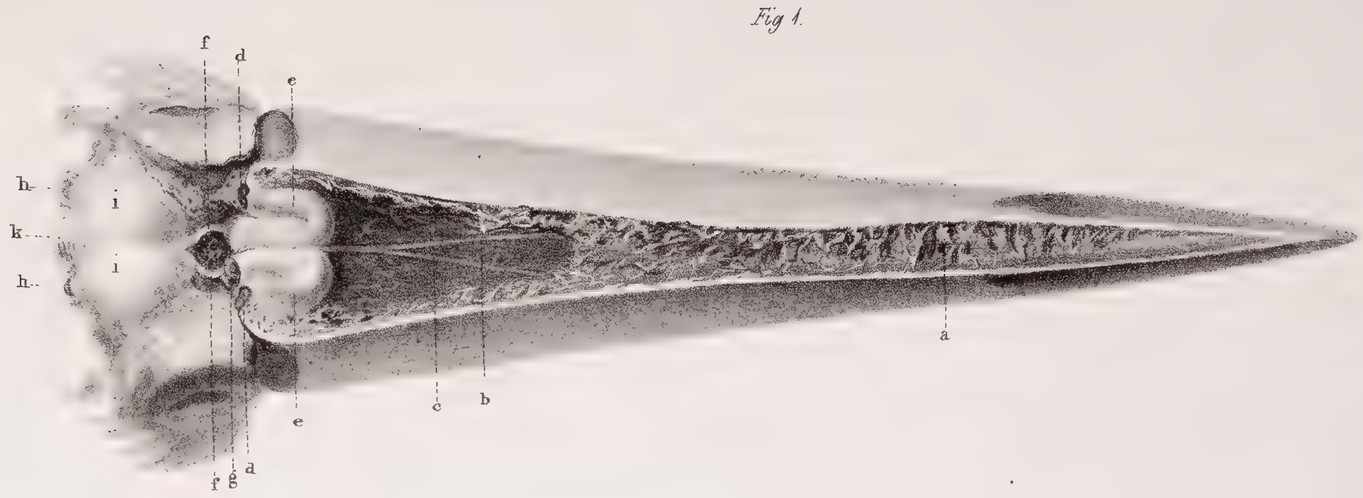

Fig 2

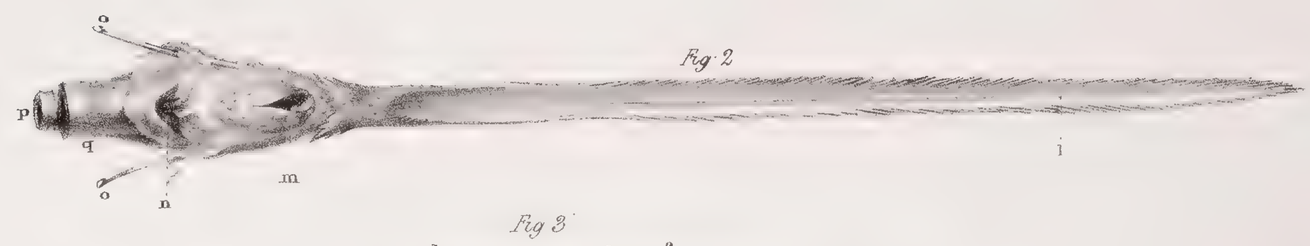

Fig 3

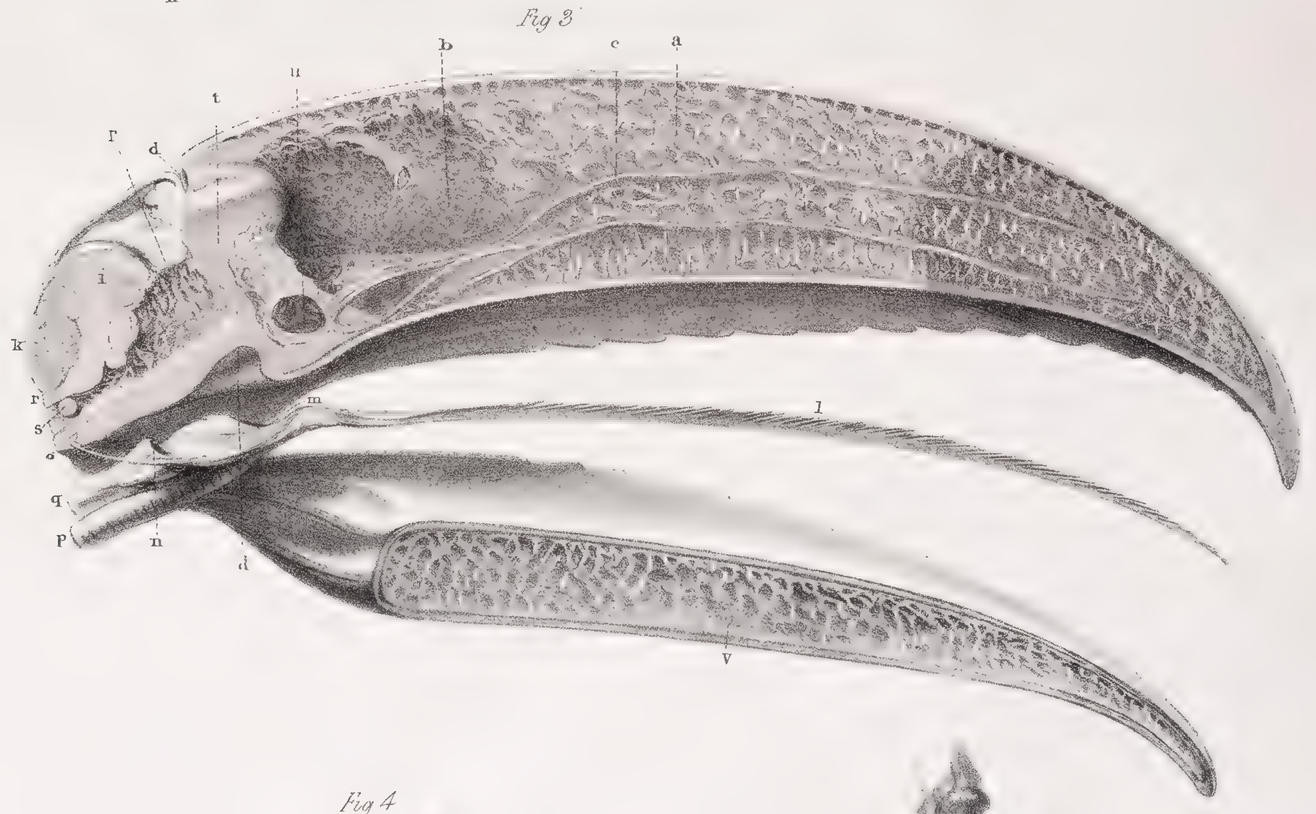

Fig 4

Fig 5

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RAMPHASTOS CULMINATUS.

Culminated Toucan.

Specific Character.

Ramph. rostro nigro, culmine fasciâque basali stramineis: ater; gulâ pectoreque albis; fasciâ angustâ pectorali tectricibusque caudæ inferioribus coccineis; uropygii plumis sulphureis in aurantium ad apices transeuntibus.

Beak black, with a broad line of pale straw yellow along the whole length of the culmen, from which a basal belt of the same colour encircles both mandibles; throat and chest white bounded by a narrow pectoral band of crimson, which is also the colour of the under tail-coverts; feathers of the uropygium brimstone yellow, passing off into fiery orange at their tips; remainder of the plumage black.

Total length, from 18 to 20 inches; *bill*, 4 to 5, breadth, scarcely 1; *wing*, $8\frac{1}{4}$ to 9; *tail*, $6\frac{1}{2}$ to 7; *tarsus*, 2.

Ramphastos culminatus. Gould, Proceedings of the Zool. Soc., part 1. p. 70.

It is now several years since I first received this fine species, which I had always been led to confound with the *Ramphastos Cuvieri* of Wagler. A more minute examination of its characters, and the opportunities which have since occurred of inspecting specimens in Continental museums, so named, have convinced me of two facts; first, that the *Ramphastos Cuvieri* of Wagler is none other than the *Ramphastos erythrorhynchus* with its beak in that stage of colouring in which the red of one season is exchanged for black; a change which there are reasons for considering as characteristic, not of this species alone, but, more or less, of the whole genus, (exclusive of the changes which take place after death); secondly, that the present bird is essentially different from the one named *R. Cuvieri*, or, in other words, *R. erythrorhynchus*, in the formation of its mandibles, having them invariably shorter and more incurved, with the upper one compressed laterally so as to present a narrow culmen bounded by a furrow on each side running its whole length; a character very different to that of *R. Cuvieri* as given by Wagler, who describes the bill as regularly swollen on its sides, of great length, and gradually drawn out to a point. In support of these opinions it may be added, that I found in the Museum at Berlin the name of *R. Cuvieri* attached to a black-billed specimen of *R. erythrorhynchus*, which could not be mistaken by one who had studied the birds of this genus. With the exception of the bird just referred to, it is impossible to confound the present with any other known species.

The *Ramphastos culminatus* is a rare bird in the collections of Europe: a fine example graces the museum of Lord Stanley; another—in all probability a female, the stature being inferior, and the characters alluded to less prominent—is in the Museum of the Zoological Society of London.

The species was received from Mexico, to which country and the Spanish Main its habitat is in all probability restricted.

A

MONOGRAPH

OF

THE RAMPHASTIDÆ,

OR

FAMILY OF TOUCANS.

BY

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